REWARD IF RETURNED TO

$2.98

THIS BOOK BELONGS TO

ROBERT SILBERGLIED
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BIOLOGICAL LABORATORIES
16 DIVINITY AVENUE
CAMBRIDGE, MASS. - U.S.A. 02138

CLASS OF

HARVARD COOPERATIVE SOCIETY
CAMBRIDGE, MASS.

Locality index 47
Maps 51, 90, 11, 23, 420
Expenses 91, 94,
Film mailer numbers 201-202, 310, 312, 351
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15 Feb. 1970 Boston → N.Y.C. (flight #71, Northeast)

7^45 AM scheduled flight left about 8^30 AM, arrived in N.Y.C about 9^30; changed terminals by taxi. Cab let me + pkgs off on wrong side of ramp.

N.Y.C. → Miami (flight #11, Eastern)

10^00 AM flight (scheduled) was iced in, delayed, left 3^PM, arrived in Miami 5^30 PM. Missed our scheduled Apsa flight (#71). Frank made arrangements for flight #83 tomorrow. Checked baggage at airport, except photographic stuff; Eastern put me up for night, meals ($3.50 dinner, $1.50 breakfast, $2.25 lunch allowed), taxi; Eastern also paid for telegram + consultate in Guayaquil. (Helped by Mr. Frank Davis, #24, Miami)

EXPENSES: left Cambridge with $750.00 in traveler's checks
104.20 in cash
Σ $854.20

Callahan Tunnel ⇌ airport (w/ Bob Horvitz, 2/pass)	.50
Porter in Boston, tip	2.00
Cab at Kennedy, N.Y.C.	8.00
Porter in Kennedy, N.Y.C.	3.00
Porter in Miami (to claim check)	3.00
Dinner in Miami (addition to Eastern's coverage)	1.40
Postcard to F.O. Wilson.	.05
	17.95

16 Feb. 1970

Miami, at Airport Inn. Called photographic places - couldn't get Rolex device. Taxi; picked up Frank's Polarizing Filter (67 mm, Tiffen, $40.00 - 15% count plus for myself, (88A filter, u-dd, hypo-check). Went from hotel → photographic place → hotel → airport. Picked up baggage; after having tickets validated the baggage was checked (total = 160 kilos for all baggage, 80 allowed free for 4 people; so 80 overweight, at $1.81 per kilo, = $144.80. Total weight of my baggage, not including 2 suitcases of photographic equipment, was 101 kilos). We missed the lunch that Eastern would have paid for. I bought the pens and notebooks with which I originally recorded this info!

Miami → Guayaquil. Left Miami 2:10 PM, arrived Guay. 8:45 PM. (Schedule [times local, PM]: Miami [2:00] → Panama City-Balboa [4:35-5:35] → Cali [6:42-7:25] → Guayaquil [8:40-?] → Lima [?])

Took photos of Cali from air at night (2, 1/15 + 1/30 @ f/1.4 on EH)

Met at airport by official from consulate, who got us through customs without inspection. Baggage was stored at American consulate overnight. The official (Segundo Rosero) had waited the night before, 8-12 PM.; telegram sent from Miami had arrived too late [re. p. 5]. Segundo arranged for taxicab + driver to help us find hotel, and same driver picked us up at 7:00 AM the following day. Segundo promised to meet us at airport at 8:00 AM the following day. At this time I discovered loss of portfolio — left on plane near window by arm of seat. I filled out a Brauiff certificate for loss. (Contents of portfolio: re. p. 7)

Drove around Guayaquil looking for a hotel. The driver was very helpful and we found a place, Pension "Helbig", where Frank

had stayed before; it's been used by Peace Corps volunteers. Several other hotels didn't have enough room. (Frank communicates quite well with hands and fragmentary Spanish.) The place was on the 3rd floor of a dilapidated building - very hot and humid; many mosquitoes. Also Periplaneta sp., Blattella germanica, Anopheles (also at airport), spiders, termites, cicadellid. Washroom was at the end of the hall. Had a cervega (beer) at hotel (Frank had changed $US to sucres at airport before we left — got it from workers there. Frank tipped "for them all" — got hissed!). We're all tired and achey — my arms and shoulders ache from camera cases; hands are calloused. Robin is still recovering from hernia operation, can't carry much.

CONTENTS OF PORTFOLIO LEFT ON PLANE:

Stationery, stamps, carbon paper, U.S. Stamps, Customs info.
Letter to T. Eisner (with copy) with Hypericum data, UV structure paper
Copy of card sent to E.O. Wilson, (16 Feb)
Copy of letter to Eastern Airlines (general incompetance; help of Mr. Davis)
List of items contained in numbered pieces of luggage.
Tooth brush and shaver
Letters of introduction from E.O. Wilson to Roger Perry, and "to whom..."
Spectrophotometric data on Eastman White Standard; article on white standards by Billmeyer.
Cissites data, Xylocopa records, from Hurd and Linsley

Frank suggests we all write down, before we get to Galápagos, our expectations of the islands' appearance, etc. I wrote "hot and humid, with dry coastal lowlands much like the Arizona desert. Highlands, transition zone similar to Devils' Garden, Florida. In neither can one work without H_2O.

EXPENSES

Breakfast in Miami (additional to coverage by Eastern)	.25
Telephone calls (Photographic places in Miami)	3.40
Taxi in Miami (Hotel → Photo stores → Hotel → Airport)	13.00
Photographic equipment (hypo-check, film 88A, microdol)	3.90
Porter in Miami (claim check → Pan American)	1.00
Baggage overweight	144.80
Pens and notebooks	2.34
Drinks on plane (Frank's and my own)	1.00
	$ 169.69

(Paid for by R. Smith) Claim check for baggage $4.90

(Paid for by Frank Sullaway) Tips and cab fare in Guayaquil 80.00 SUCRES

Rooms + beer at Pension "Helbig" 210.00 SUCRES

[Frank got SUCRES at 95% rate]

17 FEB. 1970

17 Feb 1970 — page 6R

- Woke last: sweaty - didn't sleep much, many mosquitoes, read some Dawn Voyage last nite. 1½ hr. sleep, very humid — rained hard all nite, overcast in AM. Trip now been very cloudy so far.
- Went to airport, Frank gd fr cab; @ airport official said as plane full, not >20 lb/passenger! After much waiting, consul official (Mr. Segundo Rivero, sp Mr Hooks) arrived; tried to arrange things; loaded all onto cart but on out only 3 pieces + 1 bag went. Here we all are in plane headed for the Galápagos with all equipment back in Guayaquil airport. I managed to grab my camera case w/ Rolex, Nikon & Tape Rec — but all film, Minolta + Pentax lenses, accessories, clothing, coll. equipment, & experimental equipment & camping gear there in Guayaquil. Next flight Friday — we will have to wait till then. (changed $70 to Sucres @ airport) Flight out good. Sat near some Swiss @ front of plane, cloudy but nice views of Chatham, Santa Fé, S. Cruz. on 8R film (#1-9) w/ 58A filter @ f4, 250, 60, 15 sec. other shots (all w/ element of R. Smith) by R. Smith. Some Boobies fishing to end of roll 1. Loaded #9. Arrived Baltra. Flat & heavily w Arid @ Baltra but w/ red soil & bubbled partial rocks, opuntia-trees instead of yucca + other xerophytes. Very hot + dry @ airport, no drinking water. People jump on inside all over airport; taken to dock by truck. We went to dock, our luggage went out on the Line A onto ship (the paddle + suitcase) SAVE FOR OVER

(to page 7R)

17 Feb. 1970 — page 7R

I had noticed the luggage being packed on the truck to go to the dock, but couldn't find anyone who spoke English to ask. When we finally got to the dock, the Line A was pulling out & left for Sullivan Bay. Frank tried to get to them on a radio aboard the Golden Cockerel, a ship also @ dock — no luck. Met Fritz Angermeyer & wife. We shall go to Sullivan Bay to get luggage. Stay on board for nite. Carmen (Fritz's wife) is great — had dinner ready for us, helped stow stuff. Fritz is real sleuth, has enormous knowledge. We will go to Sullivan Bay this afternoon to get luggage. At Baltra, saw many of the dry scrub trees, also a few smaller, deciduous, also small succulents, some flies, Physanura, Campodea, Rob + Robin claim saw a Xylocopa, many — centipedes, beetle, large + small, beneath rocks, incl. fully winged Calosoma. Also a lizard, + frogs (Hoge + Jay) beneath stones), sarcophagid, cucaracas, abound out — Pelicans, frigatebirds, boobies (blue-footed), tropic birds, storm petrels, herons, ... Cannot collect because No wind, alcohol, pins, etc.

- Fritz + Carmen are so knowledgeable about the islands & life on more so than many scientists. No doubt this comes from intimate contact with scientists, but they have a

(to p. 8R)

* Plants — Opuntia trees, also a few 2-m high shrubs resembling the fig-like tiny small red flowers species 1 & 2.?

sense about things that is their own & very straightforward about things

17 Feb 1970 — page 8R

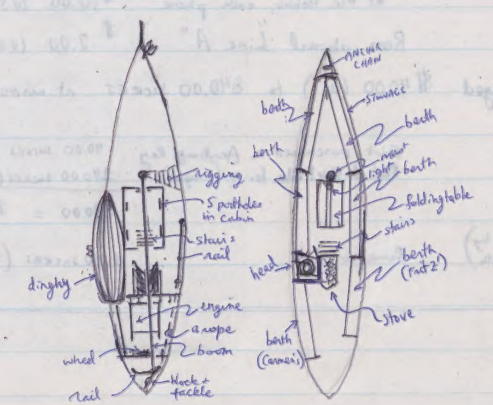
- Accords to Fritz H, a Swiss @ the station, (Daniel Weber, has been coll. plants here for several years, occasionally for Station.
- Carmen mentioned that most of the plants atop Daphne Mayor were fruit. Croton or something else. Croton flowers w/ small yellow flowers in inflorescence; bears small red berries, even when no rain — still green, shiny leaves.
- Fritz + I talked about whales + whale sounds. They have porpoises all along here, + some [some seen Thursday (18) arriving by Rob] Baleen whales. I told him of Payne's whale song, he told me of attempts to record baleen whales' sounds here (they use inboard since no motor noise) — swiled by sounds of buoys bearing equipment clanging together. Never got recordings. Also have a small very shy porpoise here in addition to Fritz's. Spent part of nite after dinner below talking about effects of man — also about Fernandina — which we talked about earlier. Fernandina tortoise is "Fantastic" — quite wide where it lives, but distinct. Some believe they transported — but doubtful — so from where? Talked for 1½ hr — recorded some [illegible] — should transcribe later. (page 6)

(to page 9R)

17 FEB. 1970

Carmen and Fritz' boat "NIXE" - built by Fritz Angermeyer

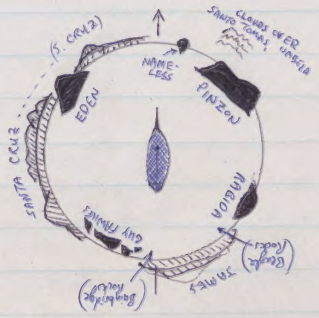
(32 feet long, 5 foot draft)



ABOVE DECK — BELOW DECK

17-18 FEB 1970

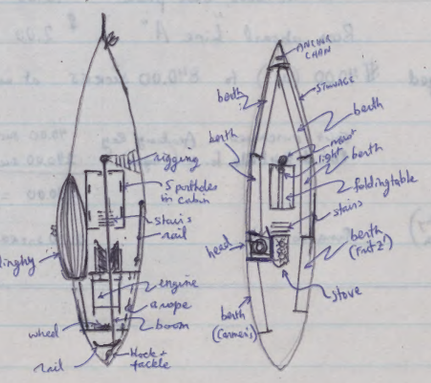
(18 FEB 1970
HORIZON AT
7:00 AM.)



17 FEB. 1970

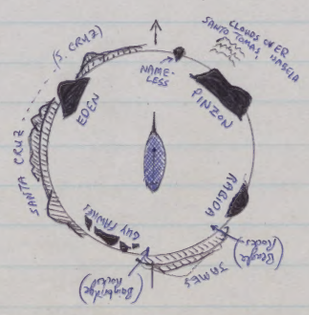
Carmen and Fritz' boat "NIXE" - built by Fritz Angermeyer

(32 feet long, 5 foot draft)



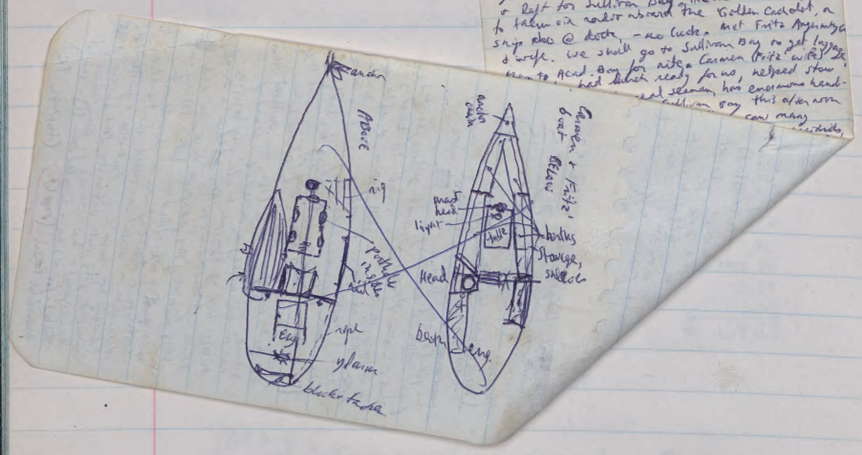
17-18 FEB 1970

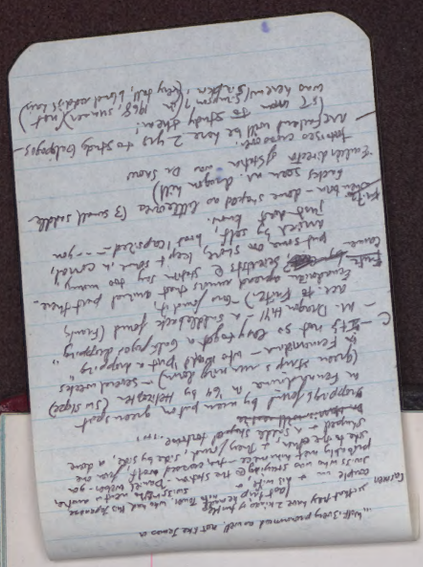
(18 FEB 1970
HORIZON AT
7:00 AM.)



17 Feb. 1970 page 7R

I had noticed the luggage being packed on the truck to go to the dock, but couldn't find anyone who spoke English to ask. When we finally got to the dock, the line it was pulling out of left for Sullivan Bay. Frank tried to get a taxi to take us aboard the Golden Cockerel, a ship also @ dock, - no luck. Met Fritz Angermeyer & wife. We shall go to Sullivan Bay to get luggage. Carmen (Fritz's wife) [illegible] here to Acad Bay for night. [illegible] had [illegible] ready for us, helped stow [illegible] and seasick, has enormous head- [illegible] Sullivan Bay this afternoon [illegible] can many [illegible]




[illegible]

17 FEB 1970 — EXPENSES

(Paid for by Frank Sulloway) Cab fare, Pension "H

Tip for Segundo Ros

of Mr. Hobbs, o

" "

Beer aboard Li

I changed $40.00 (US.) to

Shirt purchased in

18 FEB 1970 — EXPENSES

Rent at Hotel Colon for

(Paid for by Rob Smith) Bananas (5)

17 Feb 1970
page 9R

Anchored in Sullivan Bay for nite. much cooler than Guayaquil, less humid, wrinkled + hung clothes to dry, slept in pants only below. Carmen made tuna/spaghetti casserole for dinner; also cinnamon, peanut butter + apple butter, crackers + tea (or coffee). Lunch same w/o spaghetti. It's amazing how Carmen gets things done for 6 people in the tiny space she has.

Fritz first ent. ~ 1936-7. Spent way on mainland. Saw Peripatetic on board, next day saw Sea Cyphered.

Get luggage from Line A - in Sullivan Bay. Frank went aboard while I held boat away from ladder - difficult. F returned w/ 6 beer bottles. Large dock juts out at Sullivan Bay, beautiful contoured rocks, sea lions (about) the size of redcoats on rocks.

18 Feb 1970
page 9R, cont.

Nice but not ok, many pesky mosquitoes. Reasoning to know of are here. Awoke middle (next to bed) thinking it was cold, on deck, clothes still wet. Went back, covered w/ blanket to dim mosquitoes. Awoke 5-6 AM motor started under way. Went by Eden, Guy Fawkes, Rabida + Pinzon, Nameless. Eden is of moderate size, sloping + crested. looks like all dry. Guy Fawkes are rock sticking out of water w/ 4 of them. Rabida + Pinzon are large but look all dry - may be different the side we didn't get close, esp. Rabida. Nameless = rock sticking up from ocean. The trip along W. S. Cruz was eventful weather wise. Fritz informs me that there has been no rain yet (to page 10R, @ X)

18 Feb 1970
page 10R

- Saw this AM - pelicans, anchovies, sharks, sea lions
- acc. to Fritz, tides run "all" seasons, tides ~ 8' currents are complicated + unpredictable.
- @ Las Palmas, black on rock or bar that mangrove juts into sea, facing breakers, S.W. end of S. Cruz.
- 4 kinds of mangroves acc. to Fritz, RED - to edge, prob. Rhizophora, BLACK w/ pencil roots, LAND HALE = button mangrove, WATER HALE, called so since they keep roots at h.water
- Scalesia = Lecheso' - high up to 30-60' high (LEECHEOH-SOW)
- 'Guyaquillo' - large diam. tree, high up, hard wood (GOO-YAH-KEE-YOW)
- 'Cocotillo' = Opuntia - high up, on rock
- Santa Cruz! (KO-KO-TEE-YOW)

X but this morning opp. Las Palmas (~ 7-8) we got light showers. Carmen pointed out areas of bright green in coast where rain had been - this light, bright (arsenic) green contrasts strongly w/ dull brown of arid zone elsewhere. Similar regions along coast. After Eden is Dragon Rock on S. Cruz. Strangely crested gives its name.

Fell (lunch) around noon. Carmen made a batch w/ frankfurters. Tin dark bread (great) the bakers sent off at home from Sandonga. It keeps about a week. (to page 11R)

17 FEB 1970 — EXPENSES

(Paid for by Frank Sullaway) Cab fare, Pension "Helbig" → airport 60.00 SUCRES

Tip for Segundo Rosero, on advice of Mr. Hobbs, over 'phone $10.00 (U.S.)

Beer aboard "Line A" $ 2.00 (U.S.)

I changed $40.00 (US.) to 840.00 SUCRES at airport.

18 FEB 1970 — EXPENSES

Shirt purchased in Academy Bay 40.00 SUCRES (= $2.00)

Rent at Hotel Colon for 4 (1 night) 240.00 SUCRES (= $12.00)

280.00 = $14.00

(Paid for by Rob Smith) Bananas (5) 2.00 SUCRES (= $.10)

18 Feb 1970
Page 10R

- Sieg Mtg Mt – pitchfork, andesite's shearwater,
- acc. to Fritz, tides up 4', spring tides ~ 8.9'
  currents are complicated & unpredictable.
- @ Las Palmas, black [redacted] on rock on bar that
  breakers, mangrove jetty in sun, lacy
  [redacted] S.W. end of
  S. Cruz,
- ¶ kind of mangroves acc. to Fritz, called so since
  RED – to edge, prob. Rhizophora, they look yellow
  QUICK, w/ mesh nets at a distance
  HAND HOLE = button mangrove
  WATER HOLE

  to 50-60' high
  Scalesia = 'Leoboso' – high up (LEECHO CH-SOW)
  'Guya vitto?' – large diam, tree, 'guayas',
  hard wood [GOO YAH VEE-TOW]
  'Cocotillo' = Miconia – high up on Isla
  Santa Cruz! [ko KOH-TEE-YOW]

X best this morning – pop. Las Palmas (~ 7-8)
we got light southerly. Carmen pointed out
areas of bright green in coast where rain had
been – this light, bright (avocado) green con-
trasts strongly w/ dull brown of arid zone
elsewhere. S.W. lies sig. cones along coast. After
Eden's Prayer Rock on S. Cruz. Strangely
crooked gives its name.

Fell twice around with Carmen made a tortilla w/ frankenbits.
The dark bread (great) she baked herself at home
from sourdough. It keeps
about a week.

(to page 11R)

18 Feb. 1970
page 11R

clear sky around 11:30 pm
so we left showers behind
now Bonington barely visible
under cloud dead ahead — large & light.
Santa Cruz still on left; Zonation distinct
but more like Ft Williams than Seaweed;
description. Pharma 3 to reject, but
isn't visible, only cloud above it, ~70 mi.
away.
This PM towed small plankton net but
got nothing. Mesh is too fine & not
big enough @ orifice. Should reconstruct.

(Landed at Academy Bay ~2 PM).

- Aboard boat, cut hair from front and around ears
by myself w/ razor on Swiss Army knife. Found it
got in way when gliding, I am getting rather
hunched, esp. in neck & backs of hands. Not
enough room to go around.
- Fritz told me more about plants of islands, &
some details of currents, but I forgot most of it.
Currents change much, locally depend upon
how currents strike islands which determine
how eddies form between them. Last year was
a El Niño year, acc. to Fritz.
- Cameron mentioned Mockingbird of Champion
(Mimus [illegible]?) — a sp. found only on
acc. to Fritz Champion — NOT on Española.
Seals have large Pharma
cats + dogs may have elim'd.

(to page 12R)

18 Feb 1970
page 12R

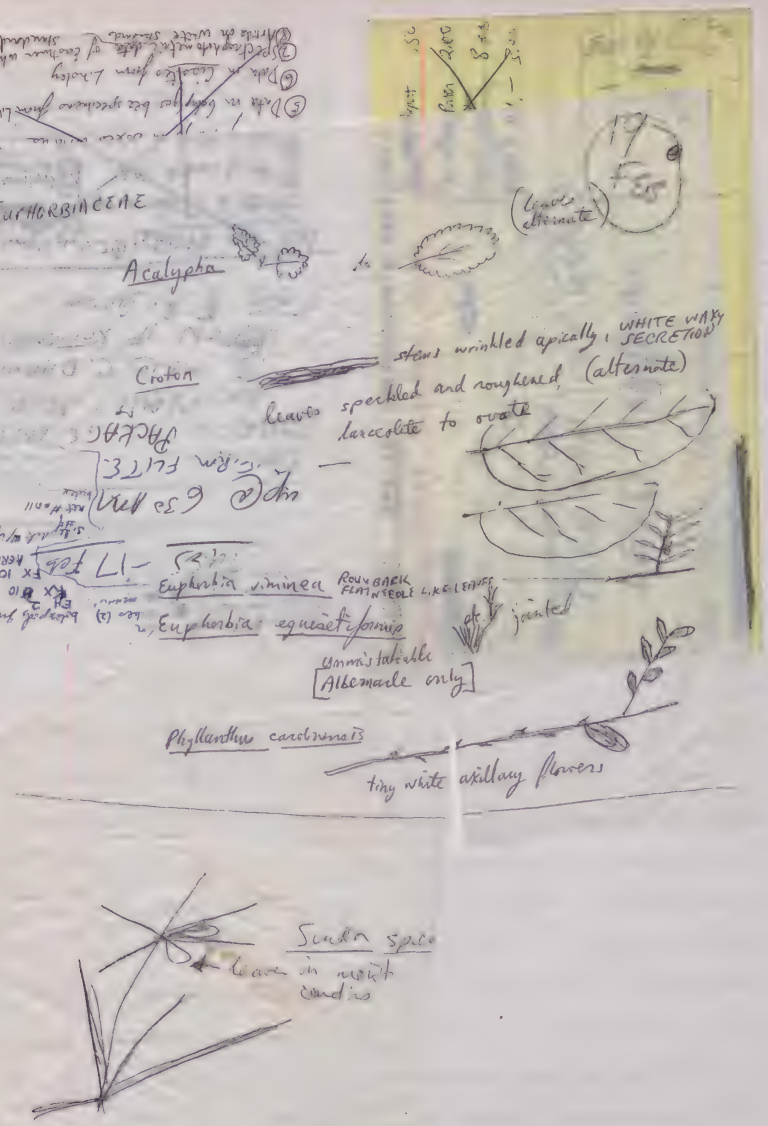
- Landed @ Academy Bay ~2 PM
- Fritz had a consultation w/ man @ local store,
got us place to stay @ $60.00/mo each (~$3.00)
meals incl. Unlocked staff upstairs. — tremendous
steps. Dozed for awhile while Fritz played w/
newspaper + cambia — later left to find grocery
supplies almost gone — ship will be in tomorrow.
Got a few canned goods left. Bought shirt
for $40.00 (= $2.00). Walked over to Station.
On way met Mrs + Mr Johns
2 Peace Corps volunteers. He had cage w/ him,
she showed us where to get bananas (bought
some — 5 for 1 sucre) and bread, as well
as general info. on food, butchering, etc.
when they butchered, there are 3 lines in town —
one for ♂♂, one for ♀♀, + one for VIP's.
Bell is rung the night before. Mrs Johns asked
some bystanders "Conocimiento" and was and'd "Si"
we parted, left for Puerto Ayora. Perry not there,
was aboard "Velaya" yacht of Sierra club, that
arrived in afternoon. Carl Engum is aboard it,
acting as guide. We waited awhile, then left site
+ had some water (good!) and returned to hotel,
bought more bananas (5 for $1). Had some
chicken dinner @ hotel w/ soup (onions & chicken drop)
rice & stew, fruit salad, + coffee. Unusual fruity
drink (Papaya?) saw @ Station — marine iguana.

(to page 13R)

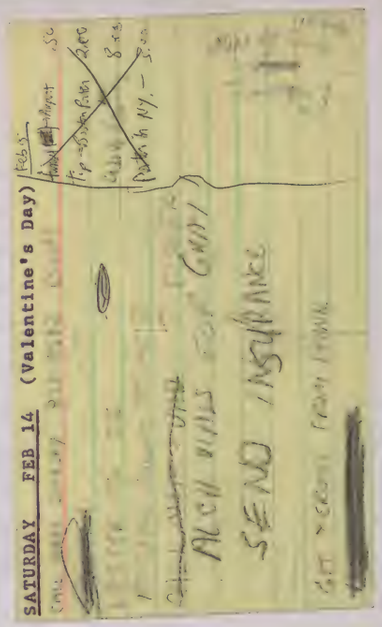
18 Feb 1970
Page 13 R

Lava lizards all over. Gekko @ site in room.
Also finches, saw 1st mockingbird in yard.
Geospiza fortis, Geospiza fuliginosa, Geospiza
fuliginosa all over!
hotel + everywhere. Also Sarcorhynchus, mockg. is
abundant. Sceloporus everywhere & Stenocercus
is in hotel, = Heterpuda, w/ egg sacs.
Also Pelecanus, w/ egg sacs.
On way back from station, met Don + Dick Paull,
who are keying the Lizards of Galapagos.
Darwin mentioned that the Galapagos Lizards
near Darwin have a lot about herself
(Bulimina?). Also, someone working on turtles
is staying near us. - McFarland
Crosby, D. Rob, U Mich.

Tours - went w/ Miguel by Jeep (19 Feb)
Lucio Saltos HC 8 GS
(Send new map of world)
H. Argent - underlying chin
overhanging upper lip, heavy eyebrows
lungs cy from lip, takes from
shirt pocket when I. Smokes lots,
He sets all over - active world here in Galap. Can hook up w/
home, tue, esp. early in AM. (we are 1 hr. earlier
than Eastern USA. Got contact in Guayaquil
to call Canada Response Consul indicated he prob
didn't receive Baltra letter. After the Gras



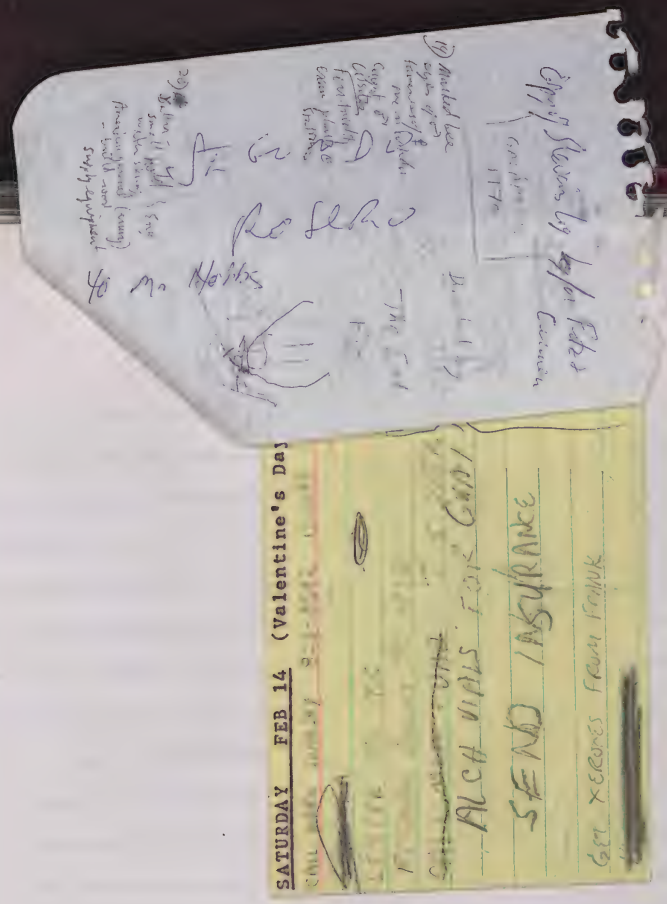
Call Sillos was connected by actimo of Carrol — got all steps of a contact, who dared to call him @ home!



18 Feb 1970
Page 13 R

Lava lizards allover. Gekko @ nite in room.
Also jakeles
Cockroaches allpoisoned
hotel + everywhere. Also sucrophaned
abundant, Scorpions
& in hotel.
Also Pig

up. heavy eyed
Takes from
hand. Smokes betty
. Gulp. Can hook up w/
Mr. (we are) his earlier
& contact in Guayaquil
1st Consul indicated he pub



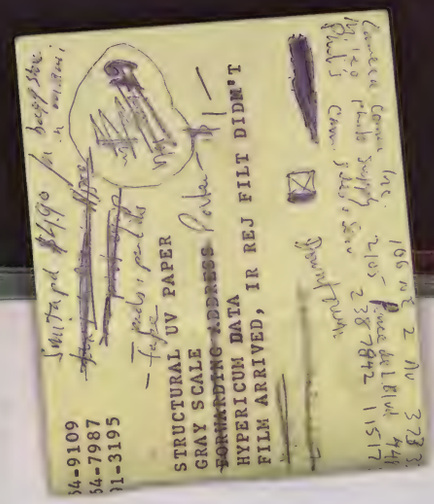
18 Feb 1970
Page 13 R

Lava lizards all over. Gekko @ nite in room.
Also finches, saw 1st mockingbird in yard.
Grasshoppers all sizes, odds all over!
hotel + everywhere. Also sunscreen bugs, crazy.
abundant. Scalopsides everywhere @ Station
+ at hotel, = Helenpeda, w/ egg sacs
Also Periplaneta.

+ Dan + Dee Paull,
of Galapagos,
Only
seen
land
by on turtles

(pg 11)

here in Guay. Can hook up w/
th. Pres. Cove are 1 hr. earlier
Got contact in Guayaquil
Consul indicated he prob
Baltra letter. After the Gov



Carmen described PALO SANTO as being very green in the rainy season. [re: p.21]

Mr. Pepper described a custom of indenturing young boys from the mainland to work out here in the Galápagos. The usual arrangement is that the father is paid approx. 125 sucres per year (=$U.S.6.25). The boy works in islands for entire year; he gets suit of clothing (one for whole year), 3 meals/day; works 7 days per week, anytime work is requested. Boy gets some time off for swimming + playing, about a couple of hours per day; plus about 1½ hr. of 'studying' (?) - but doesn't go to regular school with other children. (Mr. Pepper calls them 'peons'). Boy is not paid a regular wage; but may earn some tips; also gets money for candy occasionally. [Obviously this is an incentive to produce babies - they yield $, and needn't be cared for. = slavery?] Custom is widespread in south America, Central America. The boy working here at hotel got up at 6 this morning, prepared fire for the coffee, etc. He seems to be rather happy but that may just be his personality. Nevertheless, these children are better off than those in large cities, where disease, starvation, little clothing, etc.; (e.g., in Guaquil, young girls (~8-12?) were carting the slop-garbage by burro-drawn cart at dawn below the Pension "Helig")

The name of the man on the plane who was a "tour-manager" was Rick Brown, 889 Clayton Street, San Francisco, Cal. 74117 (USA) (MO4-8367)

4"×9" colour brochure of Galápagos Cruises aboard Lina I included:

"Palo Santo" [= Bursera graveolens]. "the most characteristic tree [p.20] of the {lower sloped / arid parts} of the Galápagos; the bark contains a gum whose fragrant scent is detectable from a considerable distance"; [no leaves, + pale white, e.g., South Channel, Baltra]

"Muyuyo" [= Cordia lutea]. small tree w/ fresh green leaves, + showy yellow flowers.

4 spp. of mangrove: (1) red, w/ stilt roots, (2) black mangrove, (3)

white mangrove, or "Jeli", characterized by its thick, twisted, ribbed trunk, and (+) button mangrove, or "Land Jeli", less common, bears conelike fruits.

"Lechoso" = local name for Scalesia

Cruise prices range from $275-700 (single) or 175-480 (2-berth) or to 350 (3):

Write to "Adventure Associates" 301 Outdoors Bldg, Columbia, Mo.

or "Galapagos Cruises" Box 2542, Quito, Ecuador

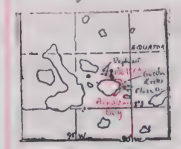
Telephone from anywhere in U.S. - (no charge) to Adv. Assoc. (800) 325-2591

Info for book from C.D.R.S., Santa Cruz, Galápagos.

20 Feb 1970 (Aboard "Nixe" with Carmen + Fritz Angermeyer), additional passengers: Bob Madden (beautiful) (National Geographic) + 2 girls, one an oceanology EM microscopist from California. Carmen fixed breakfast: cheese + bread, + coffee. She told us that several beaches towards the interior of ~~Be cad~~ Academy Bay had been removed for concrete + cement construction for roads, hospitals. At one time they were used for swimming beaches for children; were very pretty. Now also a small beach near where the Angermeyers live is being slowly eroded away by removal of sand for construction. Some cooperation from local officials to stop it but people sneak in at night + remove tons of material; little by little the beach is lowered. Reaction of locals is "Oh, the Angermeyers want a beach to themselves." Little realization of long term process — the sand is there, worth $ to people if they cart it away; leaving the sand alone gives them nothing. An understandable situation.

This morning Carmen lowered a bucket over the side and the water had the densest concentration of plankton I've ever seen. A dipped teaspoon → 4 or 5 organisms. Some things looked like

Volvox, there were some hydroids, many copepods, etc. Also a blue (brilliant) octopus (Macrozoon pictures); also passed schools of mullet that ripple the water, like a riptide; also passed ~ 1 dozen 3'-5'-10'-20' Manta rays. (Pix). Fritz tells me they feed on surface plankton, concentrate where currents come together;


Wreck
Aquarium
Wreck
Wreck
Wreck

plane – the US Army would supply equipment. Attitude of Carmen + Fritz not reassuring – they seem to think a "small" hotel, some water skiing etc. ⊙ Bultra would be OK – not adverse to "development".

I should a good map of the world for Mr. Lucio Salles, who made the radio-telephone call to the Consul at his home. I should get a copy of Slevin's "Log of the Academy" for Fritz + Carmen, also for them something for the boat (e.g., polyethylene squeeze bottles containers?). Station doesn't subscribe to science, I should get something like that for Station, also a copy of (McA + WS) "Island biogeography".

19 Feb 1970

Breakfast of coffee, rolls, grundgy eggs; then walked to Station. Talked with Mr. Perry when he finished with tourists. He wants vita-sheet of sorts + what-we-are-doing from each of us. He was rather pleasant and would accommodate us as much as possible despite our lack of warning or letter(s) of introduction. We arranged to have lunch at the station; (it was served w/ beer – some sort of meat dish on rice w/ a vinegarey-cucumber-like-dish, cut from outside of some kind of vegetable.) Spent afternoon examining botanical material at the station; kept out of sun to avoid sunburn. I examined Station's labelled garden; learned Parkinsonia, a few plants also learned from Dr. Weber, who has been here 4 years doing botanical work (herbarium). From him I learned Sesuvium sesuvium (ouch). Also saw my first Xylocopa darwini. Caught ♂ by hand in front of lab building hovering over low bushes of Alternanthera echinocephala – (guarding territory). Bee was examined – eyes show speckled interference patterns that remain "in place", (w pseudopupil) as one rotates eye. – would interest Bernard w/ Miller. A ♀ seen visiting Scalesia – tame !?! I knocked it with finger – no reaction. Should be easy to mark. The ♂ had a small yellowish-brown thing crawling about on head, between antennae – (= Cissites larva, probably) no nests seen or looked for. The ♂ marked w/ India ink in cell of right forewing, also on thorax on upper left. [Re-marked no #1 – was there each day looked for through the 22nd, which is day this is being written.] Released ♂ disappeared upon release but may [did] return.

20 Feb 1970

Skinny man from Metropolitan Touring wouldn't make any sort of deal on cost of luggage-transport vs cost of extra day's charter. Now Lina-A owners really owe us 2 days extra charter – (1) not allowed to bring stuff since their passengers monopolized Tues (18 Feb) flight, so 20 Feb owed; (2) took wrong baggage the 18th, so another day owed. Metropolitan Touring charters planes from Government (Tame), acts as tour agent. – no connection with Lina A. (?!!?). Must write to Lina A! (Greek owners)

Return aboard "Nixe" incl. myself; Fritz + Carmen; Bob Madden (know-it-all) (NGS photographer); 2 girls (Pam [EM] + Maxine); a chubby man + his son (he is Salmon fisherman (runo boat) from Seattle, off season; the guy (Bob ?) who teaches elementary biology to elementary minds aboard "Lina A" (+ sells sunburn lotion + postcards aboard, too). Bob Madden gave me $25 to cover himself + 2 girls – this I gave to Fritz. No arrangement made between myself + others aboard, except that, in each case, Fritz agreed to take them – only after consulting me for veto first. While loading my glasses dropped off pier – a few minutes later Carmen dove for it – got them on first dive! (Fritz can't dive – he has punctured eardrum) Carmen is really great! Aboard lunch was her great bread, tunafish w/ tomato paste, cheeses, etc. I split a

been with Fritz. I'm very happy about everything being there.

In south channel, shot (pk) of sea lion, portrait of Fritz, sunset over northern end of Santa Cruz. – w/ 400 mm on 1000 DTL, hispped Ekta.

Fritz just described some properties of woods here. Scalesia is used as a lumber & is good provided one removes the pith; grows straight* and tall. A wood, described as "the best wood in the world;" heavier than water, similar to teak, of which the keel & bottom of the boat is made (he built whole boat himself) – is called "MATA SANO".

Fritz also mentioned that after the collapse of Fernandina he saw lightning larger than any he had seen before in his life, [If ordinary lightning = thickness of finger, this = 2x girth of man (area indicated)] intermittent for ~2 hrs. after collapse.

"Night lightning" is occasionally seen at a distance (no rain). Lightning more prevalent during thunderstorms, in rainy season. He has seen at least 1 waterspout, so that possibility as well.

2 night feeding gulls passed us over port side – quite dark, full moon approx 30° high over port. (look like bats)

Never get severe storms (except heavy rains) – sometimes high winds, esp. near points of islands. (Fritz)

Fritz' boat has indicated times between islands →

Night feeding gulls common on Plaza, Daphne, & a few other place.

Carmen told me earlier that sometimes Xylocopa are attracted to artificial flowers made into straw hats worn around here. [She felt that] they didn't use smell but, more likely, vision. [Remarkable observation !!!]

Fritz mentioned something about rafting yesterday. He very rarely sees anything at sea like natural rafts, just man-made driftwood. However, in the rainy season, he occasionally sees branches sticking out of water, and he's sort of promised to help if possible examine any such material we encounter.

21 Feb 1970

Details of day below (p. 27).

Blacklight set up facing west from lab building, using wall as reflector. New records for Galapagos = PSOCOPTERA, abundant at AVBL; also Rhipiphorids (several specimens) & a Bostrychid; many Oedemerids, an Elaterid, some short-antenna'd Cucujoid-looking (ostomatid?) beetles that stridulate; mosquitoes abundant. Also Cerambycids, esp. one that closely resembles mangrove species from Florida; also alate ants and termites; also a Reduviid-looking bug, prob. Emesiine, that "pumps" up & down on legs at night, resembling a lizard doing "pushups". Also Hydrophilids (1 species?). Some stuff in alcohol (as other subsequent nights. Lepidoptera abundant, in rather poor shape, due to lack of quick killing jar.

Recorded details of day on walk home at night – moonlit, etc.

Got up, had breakfast this morning = crummy eggs --- breakfasts getting worse at "Hotel Colon Insular" where we stay with Mr. Pepper. Walked over to Charles Darwin Research Station – I talked to Mr. Perry, who had Miguel (has worked for station 6 years, since dedication) (Miguel is from mainland Ecuador) take me over to Fritz' boat to pick up luggage. I forgot travelers' checks so I'll have to pay Fritz later. Trip back out low tide is tricky detour around rocks. (Fritz's boat has 5' draft, can't get near station) We (Miguel & I)

unloaded stuff at the pier; Rob Smith then helped us load + unload jeep at the lab, while Frank fiddled with his camera. Stowed stuff under sinks + window-tables. Spent rest of day working on paint set, setting up. Darkroom is elsewhere on station grounds — not at lab. - this may mean difficulties in timing of developing + photographing later. I don't want to have to develop in brackish water - which is the only stuff running in the lab. Fresh water is outside in a tank near the lab. — must go out in hot sun to get water to drink.

Dinner at station (lunch) - meat with rice (giblets), whole potatoes, guacamole (avocado), lemonade. 2 guys from Florida (work at Ross Allen's; from northern part of state) are here filming, but are not doing anything for any single particular market; they are having trouble deciding what markets will be best, but they feel they have good films.

Mr. Perry seems to be an effective station director - discouraging + keeping out non-scientists/non-workers.

On way to station, there's a overhanging machineel tree (Hippomane mancinella) labelled " - injurious to health." Leaves pointed at tip, ovoid; [bark similar to trees we couldn't distinguish in Fla. (incl. blollywood, poinwood, ...)]. Tree covered with candate leaves of something else (Cyptocarpus?), so hard to tell what's what. Hippomane appeared to have apical staminate (flowers) — inflorescences. I leaned against it (no effect).

Mr. Perry showed considerable interest in the blacklight I set up. Apparently he's never seen one; of course, being a collector of

moths, he was rather amazed at the results. Neither had Dr. Tj. de Vries (bearded building Dutchman who is working at the station, field is bird-of-prey ecology; has interests in Lycosids [see (acknowledged in): Vlijm, L. + A.M. Kessler-Geschiere. 1967. The phenology + habitat of Pardosa monticola; P. nigriceps, and P. pullata (Araneae, Lycosidae). J. Anim. Ecol. 36: 31-56] — has a few Lycosid-pets here at station; also interested in Lepidoptera) ever seen one. Perry + de Vries have several dozen additions to Galápagos 'heterocera' - mostly Noctuids + Pyralids. They've sent stuff to British Museum (- one shipment lost) for determination.

At dinner we discussed itinerary for Fernandina + other places - trips + expenses. We (I) want to make March 3-5 trip to Fernandina with Perry - he's been down before (Dec., 1968) and knows the way. Another possibility is that the Calypso may help us with their 2-man helicopter (!) - drop in water + supplies.

Perry + de Vries 'casually' picked moths off light + walls - I don't think they want to show their surprise at the improvement.

Tonight I noticed that Lycosids seem to be missing along ground-trails - replaced by Heteropoda! on trail, ground, in vegetation, etc. — not just on walls + under bark. (I did notice a Lycosid on Baltra behind airport under stone.) (de Vries' Lycosids were collected at cove(s), brackish (?) not right at station) (Heteropoda eyes glow just like Lycosids') Also collected a vial of spiders at dock tonight.

Gasteracantha is a different species here with a charac.

teristically different web marking — a dash-system of bands of silk on outer threads. I should photograph it or at least draw it.

Nothing but cellenbrk came to my dox of "cyan blue" with watch-glass of sugar solution set atop fresh-water tank. I remarked ♂ Xylocopa, #1, and ♀ on Scaleria was marked #2. Drs. Perry & de Vries showed me some butterflies collected on the islands. Agraulis (= Dione) vanillae, & esp. Danaus berenice, are small, almost ½-"normal" size. Both breed here in the Galápagos. Danaus plexippus has not been seen here recently, at least during stay of Roger Perry.

Today I put into refrigerator UV-film, IR-film, batteries, & EM fixatives. Dr. Perry promised to see what he would do about getting some ice for us (from Mr. Chease — meat-storage place in Academy Bay). Dr. de Vries also said he'd look for more cyanide — I made 2-3 killing tubes (one broke in "tortoise room" = bathroom — 23 Feb 1970) with cyanide I brought with — they may not last and ethyl acetate is very slow.

Work here is similar to Arizona, [illegible] Moon has gone to full as we've been here. Sun rises & sets, moon rises & sets at almost exactly 6 AM/PM sharp —; opposite one another here at equator.

Sometimes I'm ecstatic, otherwhile proped & [illegible] I'm very [illegible], esp. [illegible] — so is Frank & others.

My sunglasses turned up in my large camera case.

Dr. Weber showed me how to get & prepare silica gel. Use E-dry film. [illegible]

[illegible]

Luggage $16.25 (2 pcs)
Rem. H. 2 Pm under/note x2
$25 from Sib middle-man/[illegible]
beer —
[illegible] $25 from me [illegible]

22 Feb 1970
on # 8 dawini
terrace in front
of CDRS lab bldg.
(Calcarous - Santa Cruz)
Monterey Bay.
plant is Allozoogloea
iconfusephala

stay - excursion [illegible]
back in seconds - to [illegible]
then all gone! [illegible]

#3 - 23 Feb 70 trail
by tortoise house on
Waltherova (♀)

#4 - " (♀)

#5 " (♀)

#6 " ♀

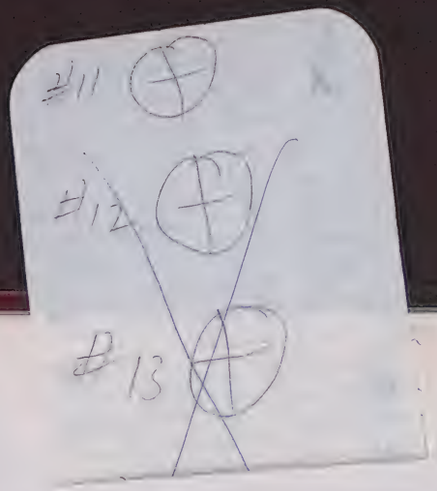
#7 " ♀

#8 " ♀

#9 " ♀

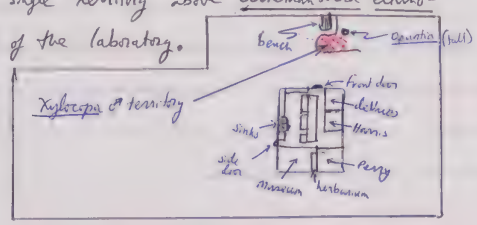
#10 " ♀ Stuck on thumb, squeezed blood

23/ blue eyed aged but weathered inc. lower bottom left side of mouth. - hair white
Met Andre Kimbrick, [illegible]
settled here ~40 yrs ago (1926)
w/ gp. of 25 men from Norway
only 2 left now. Brought cattle
w/ them - didn't know water.
lived here since settlen., began
work w/ Sprit of station ~ 1957.
Care of tortoises. Never stay by
bees + kit knows they can bite.
Knows centipedes not poisonous
pain. C's were more abundant,
roots in lowlands, now he believes
~~they~~ fire ants eat eggs. — more
abundant above. C's enter houses.
DEVELOPED IR film
(guana) save for over, 24, 25


#13
#12
#11

25 Feb. 1970

Marked bees in front of laboratory building while tape recording "letter" to all, sitting in front of lab on bench. Very hot. ♂ #1 has not returned to his territory. Another ♂ caught occupying it, labelled. ( ) Another ♂ replaced that one, labelled ( ). A third ♂ replaced the second, labelled ( ). I have not seen ♂♂ anywhere but in that single territory above Alternanthera echinocephala, in front of the laboratory.



2 ♀♀, visiting the Scaleosa in front of the station, were also marked, (,). Both of these hovered in front of me for about 10-15 seconds before taking leave after release.

This evening, about 11 PM, Dr. de Vries and I talked over the use of my blacklight, which he will use at station during my trip to the Caseta, and at Tower Island next week with his portable generator. He will have a plywood box constructed for it. I gave him some rubber foam to pack it. (See my letter to him, left on his door, copy, p. 43)

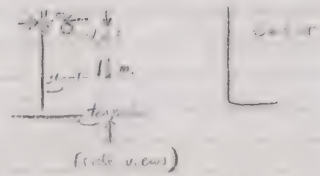
Dr. Perry and I had a discussion about Fernandina trip. His party presently includes himself, Sir Eric Shipton (in his 60's, Himalayan mountaineer, to 20,000' feet on Everest, searched for abominable snowman, etc...), Dr. Baird, Dr. and Mrs Harris, plus ? - peter??? . Dr. Perry cannot tell me details of whether or not I may accompany them until Saturday, — which means, of course, Monday, [to page 44]

25 FEB. 1970

[COPY OF LETTER TO DR. DE VRIES]
11:30 PM.
25 Feb 1970

Dear Dr. de Vries,

I forgot to mention to you that night that the best way to use the blacklight is to reflect it off a specially shaped sheet hung vertically, with a trap below it, so with the vertical sheet bent forward below the light.



Also, the lamp should be taken out of the sun in the morning — at well over [illegible] that way.

[illegible] years ministry [illegible] that [illegible] and myself will NOT be [illegible] for [illegible] days, and not too expect we will further notice.

Have a pleasant and successful stay in Tower.

Sincerely,

Robert Silberglied

25 Feb 1970 (AM)
at Jimmy Perez'

[Supplies for 6 persons] (3 days) *

18 little boxes of raisins	3 6.0 0
12 cans of tuna fish	6 9.6 0
6 chocolate bars (giant)	6 6.0 0
2 jars of jam	3 2.0 0
2 jars of peanut butter	2 6.0 0
3 boxes of Jello	1 2.0 0
6 envelopes of dried soup	6 6.0 0
20 boxes of tea	2 0.0 0

($16.35 [U.S.] = 3 2 1.6 0 * (SUCRES))

Paid for by ~~J. MacMath~~

(each share approx $4.60 U.S.)

(Dr. Peter Pritchard gave Rob Smith 200.00 sucres for his share of above, should get rebate.)

25 Feb. 1970 (AM)
at Jimmy Perez'

2 giant chocolate bars →	2 2.0 0
2 pkgs Sugar (1 lb each) →	3.0 0
Large box of raisins →	1 6.0 0
Notebook →	6.0 0

($2.35 [U.S.] =) 4 7.0 0 * (SUCRES)

paid in sucres by myself

since I will be at Caseta the next few days. (We presently plan to leave at 5 A.M. tomorrow.)

Dr. Perry suggests that to transfer money to the Station's account, I write to source to "arrange a transfer for the sum of $— to the account of the Charles Darwin Research Station, Bank of London and Montreal, Casilla 1335, Guayaquil, Ecuador". I must also arrange to be notified with a copy of the transfer, or by a cable (to Robert Silberglied, Darwin Station, Santa Cruz, Galápagos, Ecuador) to me stating that the transfer has been effected.

LOCALITY INDEX (PRINTED ATOP VIAL CORKS)

DS	Darwin Station, Academy Bay, SANTA CRUZ
X	Miscellaneous locality
SP	South Plaza
CA	Caseta, in tortoise reserve, S.W. Santa Cruz
T-D	TOWER (=Genovesa), Collected by Mr. T. de Vries (5-7 Mar. 1970)
FE	Fernandina, N. S. de, to ~3 mi in, near 3 small cones (25-27 Mar 1970)
O	Empty vial
TC	Tagus Cove, ISABELA
AL	Alcedo, ISABELA
PE	Punta Espinosa, FERNANDINA (24 Mar 1970)
~~FE~~	~~Fernandina, North slope~~
JB	James Bay, SANTIAGO
PA	Punta Albemarle, ISABELA
JE	JERVIS
DU	DUNCAN
SC	'Sombrero Chino', Barrinbridge Rocks, nr. SANTIAGO
BA	Barrington
PP	Punta Pitt, SAN CRISTOBAL
TR	Tenaphi Road, SAN CRISTOBAL
WB	Wreck Bay, San CRISTOBAL
EC	El Chino, SAN CRISTOBAL
EJ	El Junco, SAN CRISTOBAL
GH	GARDNER NEAR HOOD
PS	Punta Suarez, ESPAÑOLA

HO Hood; ANCHORAGE E. of Peninsula
GC GARDNER NEAR CHARLES
LC LAS CUEVAS, FLOREANA
CH CHAMAON
PO Postoffice Bay. FLOREANA
BB 3 mi. E. of BLACK BEACH, FLOREANA (800 ft.)

COPY

8 PM 2 FEB 1970

MR ROGER PERRY
CHARLES DARWIN RESEARCH STATION
SANTA CRUZ - GALAPAGOS Is. - ECUADOR

DEAR MR PERRY:

I DO NOT KNOW OF ANY DECISION YOU MAY HAVE REACHED REGARDING THE POSSIBILITY WE DISCUSSED OF MY ACCOMPANYING YOU AND YOUR PARTY ON THE FERNANDINA ASCENT AND DESCENT WITHIN. AFTER SPENDING SOME TIME GETTING 'ACCLIMATED' TO EASY GALÁPAGOS TERRAIN (i.e. TO THE CASETA and BACK), I CAN TELL YOU NOW THAT I AM DEFINITELY NOT IN SHAPE FOR SUCH A RUGGED CLIMB AS FERNANDINA. I HOPE THIS EASES YOUR JOB OF INFORMING ME OF YOUR DECISION. IN ANY EVENT, IT IS A BIT TOO LATE FOR ME TO BUY SUPPLIES GET PREPARED, ETC., AND SO I WISH YOU THE BEST OF SUCCESS IN YOUR JOURNEY. PERHAPS I SHALL BE ABLE TO ACCOMPANY A LATER PARTY, AS YOU SUGGESTED MIGHT BE THE CASE.

IF YOU DO DESCEND INTO THE CALDERA, ANY TRAIL MARKINGS OR INFORMATION YOU RETURN WITH AS TO THE ROUTE TAKEN WOULD BE GREATLY APPRECIATED AND WOULD PROVE MOST USEFUL TO LATER GROUPS, MY OWN INTENDED TRIP INCLUDED.

THANK YOU FOR YOUR CONSIDERATION AND GOOD LUCK

SINCERELY —

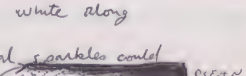
ROBERT SILVERSTEIN.

Took a test roll of Pan X, with pictures of Xylocopa darwini on Scaleosia, also Dione vanillae, ♂ X. darwini hovering, [attempt!] Tropidurus. All series start at f/4, go down 1 stop at a time. Mamiya 2x 10.5 135 SE R.Film Gunstock mounted, ringflash, 1/20 sec., all in bright sunlight, except lizard.

RESULTS: correct ~ f/5.6 all with GHOST IMAGES (sunlight!) except lizard.

5 March 1970 (Friday) Pepper and then Karl Angermeyer woke us about 4 AM, which was late since we should have been at the dock at 4. Carried the equipment to the dock (about mine: 50 lb) and in 3 shifts loaded into the Sonia via skiff. Stowed stuff below (smell was bad); boat filthy, Garcia (who runs it) is a skinny old man, grey hair, wiry & deep tan. (Speaks Spanish only). Ate some overripe bananas. Air was cool.

The ocean was beautifully "phosphorescent" and greenish white along the edge of the boat; wake was also white. Individual sparkles could be seen at the edges of rapidly moving foam



Fish moving through the water, away from the boat, left white trails.

Both Academy Bay and Commaño have flashing lights. Darwin station is the only continuously lit place in the harbor. Just on the horizon was the near-new moon, a visible crescent that seemed to continue all the way around circle

During the morning we passed Cerro Nuñez at coast and Garapatero (?), Cerro Mesa + bo tree signitos were also distinct; (confirmed by Karl A.).

Arrived about mid-morning at S. Playa channel; disembarked by dingly.

Said goodby to Sid MacMath (address:) and [been to Kerguelen; interested in vert. life of distant oceanic islands] [had discussion last night on Biogeography at Hotel Colon]

During the day we had visits by crewmen of the Calypso, who were filming at S. Playa & off Gordon Rocks all the time during our stay. On Saturday they brought us, as a gift, flippers, snorkel & mask! Also visiting were the tourists of the Line A, with the blond guy (who was like a 'counselor') and Karl Angermeyer, acting as a guide. The tourists disbanded from several boatloads, some individuals lagging behind & going off on their own. They fed bread and bananas

6 March 1970 to the tamer iguanas (land) and photographed everything – sea lions, birds, iguanas, Calypso-crew, and us. Some trash left; a few lone wandering tourists went off from groups. Tourists landed about 3 PM & left about 5. I photographed tourists, Calypso people.

When we disembarked onto S. Playa the rocks were slippery. A big ♂ & several other sea lions had to be chased off the pier.

We had 24 cisterns + 5 gallons of water. We set up camp west of the pier (several hundred feet), among some Opuntia and Parkinsonia. Others used tube-tents for shade; I put up Poncho.

During the day I photographed (400 mm lens + 2-L tubes) a Schistocerca, but none collected. Also got motion-pictures of crabs (red) and warbler feeding at dead porcupine-fish that had floated ashore (warbler feeding on flies?). Also fork-tailed gulls, and nest with single mottled egg, young; they give a chicking call (click in alarm call, too). Saw some other Acrididae.

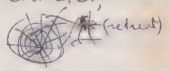
Dry zone insects are found under Opuntia-pads during day; include silverfish, scorpions, weevils, tenebrionids (dusty and hard to see). Exposing them to sunlight activates them. Tenebrionids include several forms – smooth, striated, and little (on camera)

— Finches (cactus finch?) seen and photographed on ground succulent with small pink S-pebbled flowers. [prob Sesuvium* sp. ? – D. Weber] (same thing X. d. visits at station). 2 Xylocopa ♀♀ seen but none collected. One or 2 species of Camponotus on the island; several colonies w/ alate ♂♂ + ♀ collected.

At night, few insects came to fire, one moth in soup (not collected). Beetles were active everywhere. I later collected 3 species: one smooth tenebrionid which runs quickly and

(*AIZOACEAE)

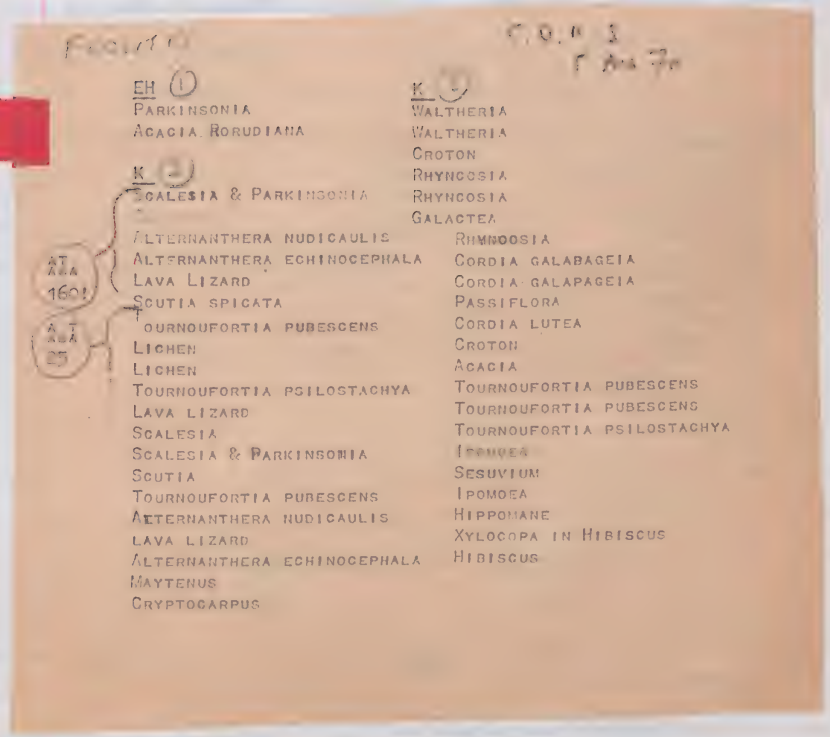
6 March 1970

death feigns, also a rugose tenebrionid that walks slowly (uncommon) and a smaller, flatter one (rarely seen). Weevils (Gerstrockeria?) collected on ground and on Opuntia at night; these stridulate. Camponotus (black) found on Opuntias wherever weevils were. One date termite (not collected) came to headlamp. No spiders could be found by "headlighting", despite 5 minute search. [A further search, ~5 min the next day, also → nothing!] Some spiders spinning webs (night-webs) collected; some with orb and retreat (!?),  (retreat) on Opuntia and also on Parkinsonia.

Later at night tried to photograph weevils & tenebrionids, but flash wouldn't work. It wouldn't flash despite indicator light showing, on both regular & ringlight.

Tomato soup & tunafish for dinner; tea.

Labelled insects, wrote notes, and went to sleep.



EH (1)	K (2)
PARKINSONIA	WALTHERIA
ACACIA RORUDIANA	WALTHERIA
	CROTON
K (2)	RHYNCOSIA
SCALESIA & PARKINSONIA	RHYNCOSIA
	GALACTEA
ALTERNANTHERA NUDICAULIS	RHMNOOSIA
ALTERNANTHERA ECHINOCEPHALA	CORDIA GALABAGEIA
LAVA LIZARD	CORDIA GALAPAGEIA
SCUTIA SPICATA	PASSIFLORA
TOURNOUFORTIA PUBESCENS	CORDIA LUTEA
LICHEN	CROTON
LICHEN	ACACIA
TOURNOUFORTIA PSILOSTACHYA	TOURNOUFORTIA PUBESCENS
LAVA LIZARD	TOURNOUFORTIA PUBESCENS
SCALESIA	TOURNOUFORTIA PSILOSTACHYA
SCALESIA & PARKINSONIA	IPOMOEA
SCUTIA	SESUVIUM
TOURNOUFORTIA PUBESCENS	IPOMOEA
ALTERNANTHERA NUDICAULIS	HIPPOMANE
LAVA LIZARD	XYLOCOPA IN HIBISCUS
ALTERNANTHERA ECHINOCEPHALA	HIBISCUS
MAYTENUS	
CRYPTOCARPUS	

AT A&A 160!

AT A&A 25

6 March 1970

death feigns, also a rugose tenebrionid that walks slowly (uncommon) and a smaller, flatter one (rarely seen). Weevils (Gerstrocheria?) collected on ground and on Opuntia at night; these stridulate. Camponotus (black) found on Opuntias wherever weevils were. One date termite (not collected) came to headlamp. No spiders could be found by "headlighting", despite 5 minute search.

CDRS
L. AMG

K/ PORTULACA
XXXXXX LUTEA
2 ACACIA TORTOOSA
2 PROSOPIS
2 MAYTENUS
CORDIA KÛTEA
CASTELA
ALT. ECHINOCEPH.
CORDIA LUTEA
PISCIDIA
BOERHAAVIA
2 PISCIDAA
LICHENS ON PISCIDIA
CHIOCOCCA
2 FLIES
CASTELA

K/ 3 VALLESIA
5 CASTELA
CRYPTOCARPUS
.2 LAVA LIZ.
????? URTICACEAE ??
2 MOMORDICA
ZANTHOXYLEM'DRY'

B

7 MARCH 1970 (Saturday)

I awoke several times during the night; it was cool and I put on jacket; it was more comfortable than at the caseta, though. The sea lions made noises all night — barks, grunts, snorts, coughs, wheezes, etc. A slight condensation had collected on things, but not on photographic equipment. Robin Eckhardt had built fire; we had jam on bread, crackers, tea, raisins, chocolate. A Spanish speaking fisherman came by; he called us 'amigos' and asked for "Jucre" (Sugar), not "Sucre" ($) in a confused conversation with Frank. In return he said he'd bring "langostos" (= Lobsters) if they caught any. [He never reappeared!] (Frank says Karl A. said that there were lobsters abundant on the eastern point.) Finches of several species were abundant at breakfast, esp. fuliginosa, fortis, and scandens. (One scandens had yellow stuff (pollen?) on bill.) I collected Monomorium(?) -like ant around jam.

Around noon while breaking into an Opuntia trunk a Calypso cameraman came by and mentioned the eclipse. I had completely forgotten about it, and it was right then. I photographed it on end of Kodachrome X roll(?), also finished a roll of aero-infrared with #12 yellow filter; also super-8 with Bolex with #88? (IR) filter. Eclipse went to about ●, but no loss in light intensity was noticed; it did, however, seem cooler about noon. Burned up IR film!

I photographed herons, gulls with egg, attempted to get "surfing" seals, cacti, land iguanas, and ourselves swimming with sea lions, after lunch. (Latter with locking cable release) We took time to find area not in bull's territory?

7 MARCH 1970

The Calypso went to and from Gordon Rocks; spent nights in channel opposite N. Plaza. I would like to get to N. Plaza but no chance, yet. ~~[illegible]~~ Calypso people spent time filming "effects of eclipse" on animals (iguanas, sea lions).

Today I got close enough to a great-blue heron around sunset to almost run out of focusing range on my 135 mm lens! 2 swallowtail gulls kept attacking him and every time one came close he'd raise his crest; finally my motions caused him to fly, at which time several gulls pursued him closely with loud cries.

I lost my thumb attachment for the short 'Ultima' cable release, in vicinity of camp bed at night; also lost attachment part of cable release of gunstock, at the western point near seagull nest.

Chicken soup + tunafish for dinner; tea

Eggshell of land iguana (?) found on surface of ground at top of cliff.

7 MARCH 1970 | This afternoon I also collected some beetles + larvae under a very old, dry ~~[illegible]~~ section carcass. I also got some termites under stones that had been shielded by dead Opuntia trunks; also head capsules of larger termites within branches (dead) of still-borne Parkinsonia.

The black Camponotus search Opuntia-pads at night, and are found wherever the weevils are. I don't know what the ants feed on there. Also, they are on the ground with the beetles, especially the smooth ground tenebrionid.

On the highest point of the island I heard high-pitch humming very-loud. 2 ♂♂ X. darwini were fighting for THAT spot! I captured one. [Red color of specimen may be due to >24 hours in cyanide]

I still owe Sid MacMath a share for supplies for Costa trip! (He invites me in anytime I'm in Arkansas.)

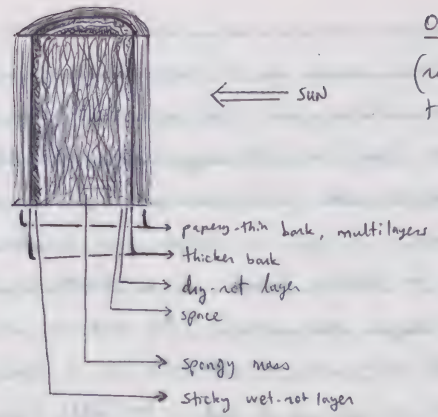
This evening flash wouldn't work again; just a few flashes, as though batteries were low. I may have shorted out the batteries!

In the evening I looked at clear sky with 2 × 400 = 800 mm lens. e.g., the Pleiades. (filled ~~field~~) →

A cloud went in front of stars;

(I saw in this group ~50 more)

7 MARCH 1970



Opuntia l.s. (rot of standing dead trunk)

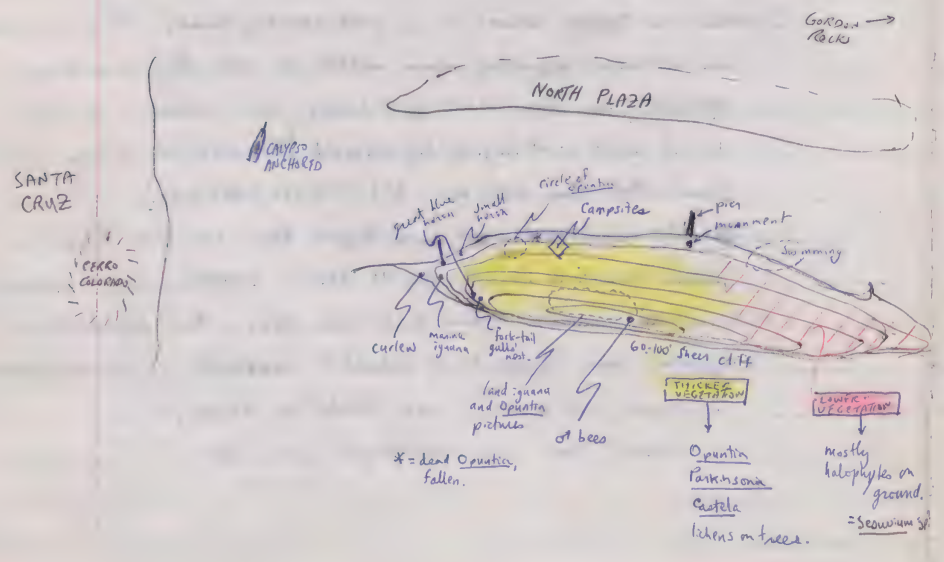
I worked on Opuntia (above) — a dead standing trunk. The 2 sides are different, depending upon whether or not dry- or wet rot. WET ROT has live Stratiomyiid larvae, and roaches. A live teneral adult stratiomyiid fly collected. [No note of biology in M.T. James' 1966 Proc. Calif. Acad. 33 (17):535-542 [1966] paper.]

DRY ROT layers and THIN-bark layers have silverfish (eggs(?) in papery-thin bark layer), beetle larvae, scorpions; a SOLPUGID(!) collected in papery-thin bark area, too. Also dependent on Opuntia are Geostrachelia (weevils), Camponotus, finches, iguanas, Tropidurus (for insects); also turtles in some places.

I collected some LIVE Stratiomyiid larvae, too.

8 MARCH 1970

This morning woke up and it was entirely overcast, but it had cleared by 8 AM. Condensation present. Jam on bread and tea w/ raisins for breakfast. Boat ("Sonia") arrived early, before 8^30 AM. We rushed to pack. I never got a chance to collect plants. I got a rather poor sample of cactus-pad litter for beclese funnels, in a plastic bag left behind by the Calypso photographers. My pack was 50-55 lb and I could hardly carry or walk with it; it nearly fell off as I got into and out of boat. The little dinghy of the Sonia →



8 MARCH 1970

was loaded too full and the waterline was 2" below the gunwales on one side! The water was calm and clear though, & we made it, although Frank & I nearly fell in boarding the Sonia. The water was so clear you could see patterns on fish clearly 8 feet down!

Expenses of Plaza trip, other expenses

Beer for me	ROBIN	.	(8 Mar)
Beer for me	ROB	5.00	(5 Mar)
Hotel (my share < 1/4)	FRANK	1,785.00	(5 Mar.)
Containers for water	FRANK	50.00	(5 Mar.)
Coca colas (24)	FRANK	48.00	(5 Mar.)
to Garcia*	ROB	300.00	(6-8 Mar.)
to Garcia*	ROBIN	500.00	(6-8 Mar.)
to Garcia*	FRANK	100.00	(6-8 Mar.)
Food	FRANK	99.00	(5 MAR)
Food	ROBIN	10.00	(5 MAR)
Food	ROB	20.00	(5 MAR)
Food	ROBIN	12.00	(5 MAR)
Laundry (mine)	FRANK	8.00	(9 MAR)
Laundry (mine)	ROB	20.00	(9 MAR)

*trip to Plaza was 100./man to Plaza, 125. from Plaza = 225./per man. Higher on return since Garcia brought 5 men!

8 MARCH 1970

In the hotel around noon (Hotel Colon, Academy Bay) I saw a small, wasp-like form characteristically hovering at door portal on 2nd floor. Captured it.

I recalled today that one day, before we left for Plazas, during a discussion with Rolf Sievers, he remarked that to this day no Ecuadorian has worked at the Darwin Station. The station has never been as crowded or active as during the present time. He also feels that the success of the national park depends upon tourism.

I should xerox a copy of Dodson's Science article (see letter from Schnell) for Daniel Weber.

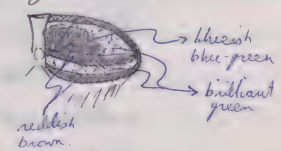
Tonight after dinner had a discussion with Daniel Weber, the Swiss who is studying orchids here. We talked about Alcedo. Weber has been to all the major islands with moist zones. He is spending considerable time preparing maps and aerial photos for use by himself and others at the station. We also discussed the Beagle II, which was scuttled after removing all the usable metal several years ago. The boat was really too slow. He related an incident where Mr. Perry and 2 others were stranded on the Perry isthmus of Isabela after a transect, while the boat, which was supposed to meet them, was 2 days late because of motor failure! The Perry party was camped there on the isthmus without food or water, after many hours on hot lava isthmus! It affected the mind of an old Ecuadorian who was one of the party. Anyway – the Beagle II had too many real problems to be usable – too slow, no refrigeration, little room, etc. The Beagle III should be better, when it arrives.

9 March 1970 This morning got up; had gaudgy eggs at Hotel Colon with the same thick jam on dirty rolls. Stopped by laundry on way to station – we should pick up things that weren't ready tonight sometime.

I stopped in to see Craig MacFarland this morning on way to station. He will lend me his pack (a Kelty) for use this month on the big Alcedo–Fernandina climbs. (I should see Mr. Johns in 2 weeks about buying a pack from him – one he had specially made that he's bringing from Quito.)

MacFarland corroborated Mr Johns seeing a tortoise on Barrington; he (MacF.) says Delkies sees them there frequently. Apparently some (6, 10, 15?) were released there some time ago and may be doing well.

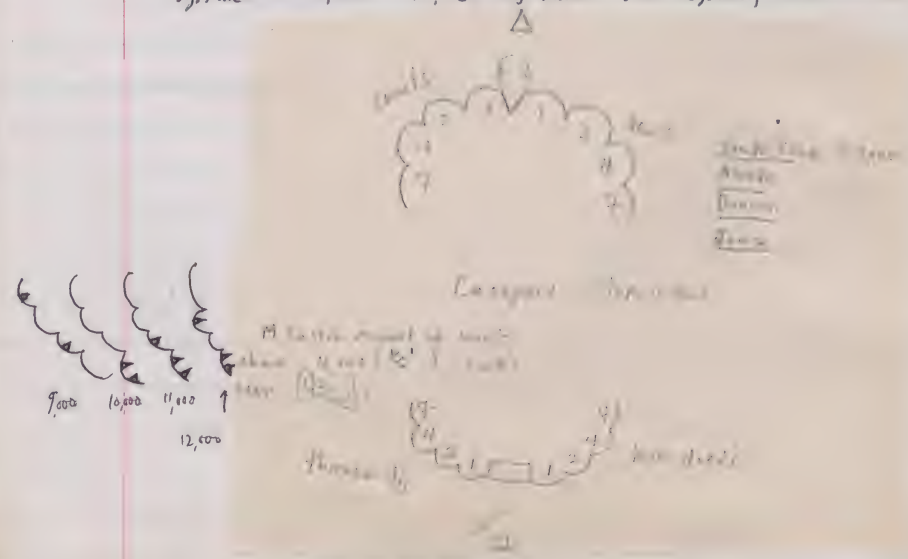
The Tabanids on the windows here at the station, all ♀, have this eye-pattern:



Robin gave me postcard which I need to write to Charles Schnell – 25¢ us.

9 March 1970 Craig MacFarland says that if you visit Salt mine on James Mr. Apollo(?) has information about a spring of fresh cold water about 3 miles up (or 3 hours up?!) from James Bay; he can also give information as to where to find tortoises. The company of the salt mine keeps him there as a caretaker/watchman; gets paid modestly ($60.00 us./mo?) but scrapes by and often has to beg food from passing ships – he would probably be most kind esp. if we leave him some supplies and/or ask him to dine with us.

Craig also showed me system for marking tortoises (below). Each island has its own series in the 1000's; Isabela has different series for each peak. Miguel Castro messed up system in 10,000 – 15,000 by double notch system; hard to read.



10 MARCH 1970 | Grindgy fly-pestered breakfast – eggs & sticky jam. Went over to station and found material on my desk collected by Mr. T. deVries at Tower. In addition to 2 fish for the station collection, there was an Eristalis caught on board by Carmen, on the 'Nixe'. The rest of the material ~~was~~ was all taken at blacklight – the one I loaned him, which he ran with his generator (a "portable" 'Honda'). There were many (smaller than the big one) acrididae, 2 Calosoma (long winged), 3 Cicindela, a bostrychid, some Cerambycids, ~~the~~ six myrmeleontids, many oedemerids, a ♂ mutillid, a termite, some mirids, a few hydrophilids, and a scarab. All material was in alcohol; the ones I pinned may therefore be discolored. Mr. de Vries set up the blacklight in Darwin Bay, about 40 m. from the beach, among Palo Santo and cactus.

10 MARCH 1970 | An accounting of lost or damaged items thus far is as follows

(16 FEB) ITEMS LOST ON PLANE (see page 7)

(7 MAR) CABLE RELEASE OF GUNSTOCK – part lost on Plaza

(7 MAR) SHORT CABLE RELEASE – part lost on Plaza

(6 MAR?) TRIPOD BROKEN –(Frank?)

(before 6 MAR.) ABSOLUTE ETHANOL OPENED –(Rob)

(6-8 MAR?) FINE FORCEPS (ULTRAFINE DISSECTION) BENT

A few days ago Dan Weber showed me an article in "Animals" on a bloodsucking lepidopteran! – a member of a group of moths, the others of which feed on the eye fluids of cattle. This one has a piercing proboscis!

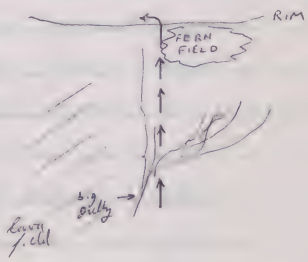
ref.: Bänziger, Hans. [July] 1969. The extraordinary case of the bloodsucking moth. Animals, 12 (3): 135-137.

Species: Calyptra eustrigata (Nochidae) (of "eye-frequenting moths"; visit mammal eyes (cattle, deer, elephants, man) to imbibe eye-discharges) – proboscis short, tapered at tip, pierces skin!

10 March 1970 | Visited Fritz + Carmen Angermeyer; decided to wait for Cristobal Carrier to get supplies – about a week.

Route planned is as decided before, with a stop at Cartago Bay on the return trip; 2 weeks out.

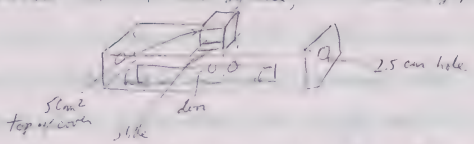
The way up Alcedo is to keep the big fern field in sight, aim for its left side. Keep big gully on left; don't cross it until about 3/4 of the way up.



Rim is split in some places; like so: ——— . X.S. would be ⋀⋀. deVries has put a pole up in one place; should aim for that.

I paid Fritz $50.00 US. for Baltra trip (20 Feb.); got back 300.00 sucres; he insists he pay us full rate (owes us 30+).

11 MARCH 1923 Built a cardboard box 10 cm square, 31.5 cm long, as follows.



a 2½ cm hole in each end, with cover glass closed in one side; entrance port at center in covered face 5 cm², with slide for double door.

Caught bee (marked ♀, ♀) on Scalesia left of station. lab

Also recaptured ♀ #12 there. ♀ 20 immediately inactive in box.

They simply rest in darkness! Wings of ♀ #12 clipped, one antenna missing.

Daniel Weber showed me a chart (he made the illustrations for, one of many)
entitled: "Los Mangles de las Islas Galápagos"

Rhizophora mangle RED MANGROVE

Prop roots ~~[illegible]~~ marine fruits

Avicennia officinalis BLACK MANGROVE

Pencil roots 4-petalled

Laguncularia racemosa WHITE MANGROVE = JELI

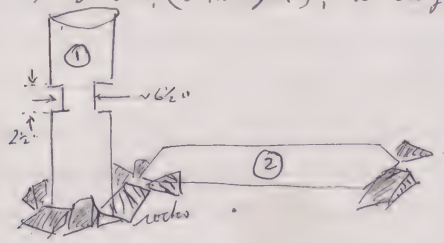
Conocarpus erectus BUTTON MANGROVE = LAND JELI

Cone fruits

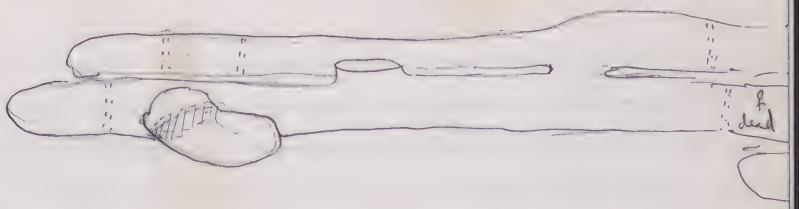
16 Mar. 1970 Today I set up 2 of the 3 balsa logs gotten yesterday at the residence of the Peace Corps workers in Academy Bay.

1) 9" diameter; 29" long, set vertically, (cylindrical)

2) 8" side, (triangular), 27" long, set horizontally

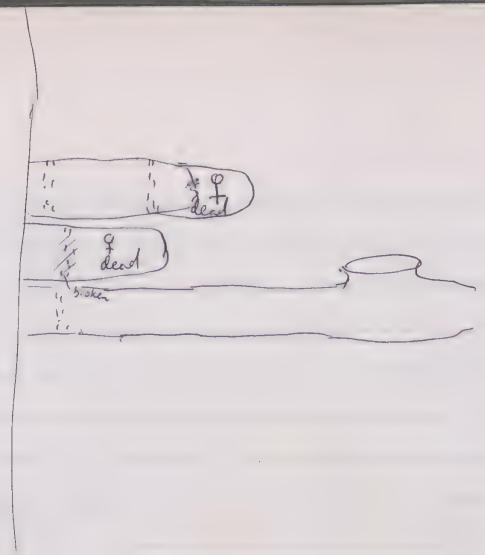


16 Mar. 1970



Pix of nest 2

1	2	6	7	3
9	12	8	10	11
4	5	15	13	14


dead
dead
broken

		(Kilos)	lb.
Mamiya 1000 DTL 35/3.5 + cap 50/1.4 + cap 2x tubes lens holder tripod knob tripod strap (HD) filter case w/ 3 - 49mm, 1 gl. w. cutter, cable rel., lens tissue		(2.35)	5.17
Plant Press	(.23)	~~(0.63)~~	.50
Flashlight		(0.06)	.13
Film (21 rolls in bag)		(0.68)	1.50
		(Σ)	(8.18)

13.0
3.0
1.0

	(ounce)	lb
45 water in plastic cont'rs	(.30)	.66
bilking jars (plastic)	(.06)	.13
75 water in 2 buckets, Cuba	(.18)	.40
fishnet net	(.10)	.22
stove + utensils, plastic bags (bucket)	(.12)	.26
tarp	(.15)	.33
parachute	(.47)	1.03
large plastic bag	(.09)	.20
~~sleeping mat~~	~~(.48)~~	~~1.04~~
15 day plastic water in bag	(.07)	.15
wire, saw, clothing, tarp, tissue, spoon, 2 garbage bags, hip packs, rain covers, Al. foil, rope, mirror, repellent, medical	(.51)	1.12
pack (empty)	(1.46)	3.21
(no food or water) 8.78 8.18	(3)	(8.78)
17.96	13.0 lb food	
− 1.50		
16.92		

[redacted]

[redacted]

[redacted]

Calibrate UV-film w/ 35 mm lens

Photograph Nylonge 16 cycle

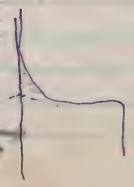
Develop Tri-X roll

Mark Lens

[redacted]

Recall 16 step

UVEL - [redacted]



[redacted]

19 MARCH 1970 | Ascent of Alcedo. Provisioning was done at the last minute; Robin took supplies out for 3 days (not 4?). Frank was seasick - his Marazine didn't work well. - retched over the side just before we left. Carmen gave us supplies to eat on shore - peaches, applesauce, and coconut crackers. I 'tanked up' 1 qt. extra on water. Landed on beach around 3-4 PM, but didn't leave till around 5, since we sat around putting shoes on and taking pictures. The roll of film I had in my camera had its leader detached; I don't know how many or what shots I missed, but they're quite a few, including some 'taken' on beach. Pelicans and sealions at beach, which was of dark sand. Some incipient mangrove shoots, too, including some of non-red mangrove species, with cotyledons & growing root, pale green. Started up at 5 PM, with gully and lava flow on left. It was quite hot until sunset, after which it got considerably cooler. After about 40-45 minutes I was very hot, sweaty, and exhausted, and dizzy. I realized it was my weight, which included several pounds extra of food (Carmen's gift), the machete; my tripod, wide angle lens, some vidio and headlamp were cached; the other items were carried by others. Rested and ate in moonlight about 1¼ hours later; 1 hour later we stopped for the night on a steep slope (steeper than initial 2 hours). We had lost our orientation with respect to the field of ferns (seen earlier from below, and from boat [see also p. 97]); we decided to take a bearing in the AM. The slope up had consisted of

Bursera and Croton, with no cacti seen at all. Higher up, grasses and ferns became more abundant, then Darwiniothamnus (and Scalesia) where we spent the night. I collected some spiders and a few other insects; a Tettigoniid moulted downslope of where I went to sleep, in a Darwiniothamnus. Night was very cold: I had on only a T-shirt and short-sleeved yellow shirt, with my lightweight white jacket; no sleeping bag or mat; just tarp on ground and Poncho. (Slept little) Sky clouded in; we were among a few gullies on both sides, in ferns, shrubs, and Darwiniothamnus. The trail up had been mostly donkey-trails; we passed quite a few groups of feral donkeys and listened to their obnoxious braying most of the night.

I took my own advice and fastened on my lenscaps. This has worked well ever since.

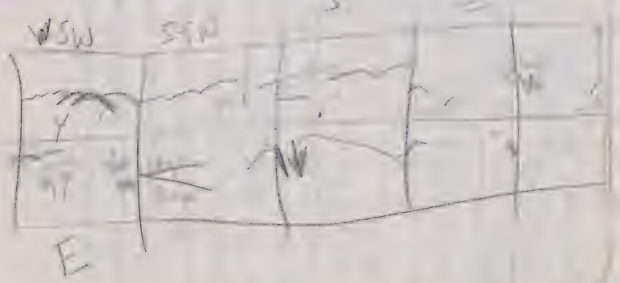
Photographic equipment for trip up Alcedo:

Mamiya/Sekor 1000 DTL body
Mamiya/Sekor f 1.4/55 mm lens
1 set extension tubes
doubler (2x)
lens holder, cable release, ruler, lens tissue & cleaner.
filters (2A; Y(K2); R1(25); Pola; B WRATTEN, in glass; 88A gelatin)
[CACHED: Schacht f3.5/35 mm lens; Bolex minipod]

20 MAR 1970 Awoke at dawn; we were still clouded in.* We had a breakfast of machica (ugh!) and started up. I led for about 20 minutes and we switchbacked our way up a steep slope; probably the clouds obscured the fact that we were only a little below the rim the night before. I didn't even realize we were at the rim when we ~~got~~ got there; I figured there must be another rise, since we had only been climbing 3½ hours at most; but we were on the rim. Donkeys stayed ahead of us most of the way along the rim. The rim was a little more open, in some places much more, than the slope up. Lot of Scalesia, with many bushes, and a covering of Convolvulaceae with very long, large white flowers. Also a tree-shrub with compound leaves; with leaf surface on stem, having vicious spines on the stems and trunks — would encounter this along much of the trip and I got

*The place we had camped had many Argiope webs hung with dew.

Alcedo Panorama #1 — E → S rim. 20 Mar 1970



some pretty bad scratches since I had no long-sleeve shirt. I mistakenly called this plant Castela for most of the Alcedo trip.

After a short rest on the rim (by + for me) we started towards the geyser, going south along the east rim and then west along the south rim. The rim was quite easy walking, in almost all places. Donkeys were ahead of us most of the time, and their trails were used by us almost everywhere we went. It stayed clouded in as we marched along in the morning, and then we reached the cleft. We couldn't see Dr. deVries' pole and so we lost about ½ hour poking around. The correct way was found (continuing straight ahead through, past, and around the "dead-end," down the cleft and up the other side to the pole. We rested there; I collected some plants. The clouds broke and we could see the other side of the cleft, and then out to sea, and finally across the caldera floor. We travelled further along the rim; in mid-day we broke up into 2 parties — Robin and Rob went straight on towards and to the geyser; Frank and I stayed on the rim and photographed, and I collected. I did a full panorama on the S.E. rim in Pan X; Koda II + 2A; Koda II + PolA; IE + #25; IR + #12; UV (should be NG). Collected around rim, found quite a few Xylocopa ♂♂, hovering esp. over bushes of various

20 MAR 1970 Awoke at dawn; we were still clouded in.* We had a breakfast of machica (ugh!) and started up. I led for about 20 minutes and we switchbacked our way up a steep slope; probably the clouds obscured the fact that we were only [illegible] below the rim the night before. I didn't even [illegible] at the rim when we ~~got~~ got there; I [illegible] another rise, since we had only [illegible] most; but we were on the [illegible] of us most of the way [illegible] was a little more open, [illegible] more, than the slope up. Lots [illegible] any bushes, and a covering of [illegible] very long, large white flowers. Also [illegible] compound leaves; with leaf surface [illegible] vicious spines on the stems and trunks — [illegible] pointer this along much of the trip and I got [illegible] since we had camped had many Argiope webs hung with dew.

some pretty bad scratches since I had no long-sleeve shirt. I mistakenly called this plant Castela for most of the Alcedo trip.

After a short rest on the rim (by & for me) we started towards the geyser, going south along the east rim and then west along the south rim. The rim was quite easy walking, in almost all places. Donkeys were ahead of us most of the time, and their trails were used by us almost everywhere we went. It stayed clouded in as we marched along in the morning, and then we reached the cleft. We couldn't see Dr. deVries' pole and so we lost about ½ hour poking around. The correct way was found (continuing straight ahead through, past, and around the "dead-end," down the cleft and up the other side to the pole. We rested there; I collected some plants. The clouds broke and we could see the other side of the cleft, and then out to sea, and finally across the caldera floor. We travelled further along the rim; in mid-day we broke up into 2 parties — Robin and Rob went straight on towards and to the geyser; Frank and I stayed on the rim and photographed, and I collected. I did a full panorama on the S.E. rim in Pan X; Koda II + 2A; Koda II + PolA; IE + #25; IR + #12; UV (should be NG). Collected around rim, found quite a few Xylocopa ♂♂, hovering esp. over bushes of various

20 MAR 1970

kinds. Females were there too, but not very abundant; they visited particularly the yellow-orange flowers of a low-growing (cucurbitaceous?) herb (collected), but also other (collected) plants. I affixed a ♂ to a thread but could elicit no response from other ♂♂ into which I introduced the tethered one; they usually hovered at a distance or fled — their reaction to me, I'm sure. Frank & I moved slowly around the rim, collecting and photographing. He found some tortoise runways that were very deep (4-5 feet!), leading to a pool with many tortoises. The tortoises dig deep holes which fill with rainwater, esp. on E. and S. rims. These holes also attract butterflies, esp. Lycaenids and Phoebis. Dione and at least 2 species of Vanessa were also abundant. [Danaus berenice was seen next 2 days — see below.] We passed 68 tortoises on the E → S rims, which was a count by 2 people walking, not particularly searching for them. Most were large, older individuals, although a few younger tortoises, less than 2 feet long, were also seen. No mites or ticks were found on the tortoises, despite my looking at the leg membrane regions of about a dozen. [Altogether, the count for the trip was 158, which included the 68 above, plus 10-12 at the geyser, plus 10-12 on the N.W. rim, the rest distributed here and there over the caldera floor and above & beyond the sulfur areas.] Also on the S.E.

20 MAR 1970

rim I collected a large number of plants growing as epiphytes on a tree at the place where our 2 parties split. Frank & I arrived above the geyser around 5:30, and Frank found a good donkey-trail down. We could smell the sulfur-fumes as we descended; at times they could be smelt on the rims. Robin had fixed a "Maggi" soup from water of the upper geyser pool (boiled & reboiled). Frank and I reboiled about 5 quants to replenish regular water. I had reached the geyser on only 1 quart of water.

21 MAR 1970 had [illegible] 3 hooked [illegible] to replenish. I searched geyser on left of reg. [illegible] forest [illegible] R & Robin (who [illegible] key before @ geyser) went on ahead to further deposits we'd meet them @ 2. Photed geyser, hornets, golden eagles, etc. Cavern pool had 2 [illegible] water beetles, some flies, [illegible] shrimp, tadpoles etc. Searched for insects at, in, and below — none in above except for dead insects drifting. (Robin says she saw something swimming below surface in upper pool)

SPEC: bees a min, esp E-S — none there. fly @ pool. 3 bees in CH (too long (red)) 4 [illegible] on elm (small, black) in crate flor (21) — bigger w/ green, and c. Others only from elm, mostly E-S.

After lng Robin saw into a beetle swimming [illegible] style, size) coll'd metal near geyser [illegible] litter — centipede, nuts, [illegible] Many [illegible] but no nest found. Took [illegible] geyser of hands, turtle, [illegible] pools — mud, turtle footprints, etc. Left around 4:00 to meet Rick @ sulfur deposit (acc. [illegible]). Trouble w/ 4WD — sank it. Recovered from Sahara forest of Clerodendron (XA 0313) [illegible] seen along other dirt tracks to crater floor below sulfur deposits + thought it. Didn't see. Along crater floor, hot, obsidian + unaltered rocks.

21 MAR 1870

lost secrets box w/ rocks (2)
lost butterfly in acorn box

Gill. colorado, Aspen Crackers, under stones. Crackers
dec. 1970. - depido gather in large to other single items
Also in some books — whining sound. Baby sounds
suddenly loud name. Heartbeat followed no — noises
loud hum. Saw D. Lawrence (name next day),
P. Sawyer, Vanessa (red hair), Rose, Gill.
Wetness - (saw Crystal in ?). (A) Sulphur edge -
mutilated rocks & crystals. Holes w/ crystals,
sulfur problem; insects in sulfur - hot tin!
Couldn't get food p. 2 At R below came up for
lunch (pleasant butter) (R Panama) ST then
Sam #25 letter, Hot tin (grown) rocks. Then noise
on side & up. New mm; at first
away, fell. Lemon tastes then nausea/faint in
mu-free season. Wound noise different lower/for
hedge could stay away scales & forest of underbrush
& sidewalk table. finally up. No sun to place where
sleep. Then away out - quite. Spent nite @
Nirvana above Morin Bay. noises of rice. Small
sides saw. Marble Dawn. wicked & photog'd
sunset after remembrance venus. Stay in sand,
bad luck toys. pencils [illegible] sky gap. then
Left (rocket set). In the street fire, hot tea.
Crackers. Gill about, descend stairs away to pulls.
Great 'n way [illegible] diff rocks forge climbing.
Friendly down [illegible] hand wire - land,
where finale left of AV [illegible] before
bay. - Cramps. sweat, rocks.

22 MAR 1970

22 MAR 1970

23 MAR 1970

[illegible] nothing alive! [illegible]
on Cocha, [illegible] [illegible] in AM -
Fritz took me to beach - breakfast - eggs, [illegible]
baker in AM went to land again
(Penguins, Pelicans, shearwaters, sandpipers,
Skuggsk [illegible]) Collected plants [illegible] by, and [illegible]
Cistus*, Lycopodium*, [illegible] on Rabida?,
white wattle flower*, [illegible] Cactus, [illegible]*,
(* in flower), [illegible]
[illegible] sea lion on collect, Cordia latifolia, but
[illegible] was there, also prickly pear, but not flowering,
was Mimosa-Acacia ??? Fuchsia spicata. The
beach [illegible] [illegible] ate from Cactus Dinsens,
and [illegible] - got [illegible] little - [illegible]
LOST - Fuscopsis @ Cactus (reg) for sample -
Fuchsia spicata - worked in. Disco. Left in afternoon
for Pta Espinosa.

Next day @ Pta Espinosa (24) got up after
breakfast - ride low - pools, something fish.
Butterfly Ambulyrhynchus; Cormorants, [illegible],
[illegible]. Collid ticks, mite off S. grandis,
mite on head, neck, dorsally, ticks between belly & thigh
& legs (back of knee base). Fetid mangroves, Cordia
lutea, misc. [illegible] open
After lunch tide [illegible] - bare feet!
shoes wet, pants to Cistus, used oars to balance.

23 MAR 1970

1968.

COLINVAUX, P.A., SCHOFIELD, E.K. and WIGGINS I.L.

1968. Galápagos flora: Fernandina (Narborough) caldera before recent volcanic event, Science 162. 1464.

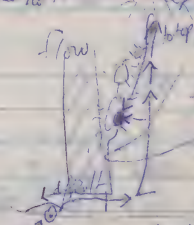
24 MAR 1970

2

25 MARCH 1970

Fernandina climb 25-27 Mar '70

25 - ascended cliff face w. side behind rock. swell. climbed above ~~to~~ cliff w/ Robin below. Fritz picked up ~~2~~ others. climb to top w/ good weather, packs, 3 cans parade (2, 1 retum) & 4 cans appliances, anchors. Ate & then left. Nansen returned, ~ ½ mi past 1st lava flow (we went W, then S). Decided not to [illegible] slow up stuff, at top. Since time got [illegible] work done than on Alcedo.



→ stayed @ small cone 1 of 3. Nansen thru next day, when west, then around Nansen OK.

– 2 miles.

coll'd @ LCR (Florida, north shoulder NG) "hot site" – clouds settled to 70' above rd

Gone (higher), stayed site. Cleared ~10 am. clouds in Fernand. Remained overt U.S. AM clear for day, returned Fernand in PM. Up the ancient around sea, wishbone hole, most genus Plant (Fernand crest) & lava tubes (pix) – coll'd potsherds. Insects too, esp under side of hole on shady trees*

#1 hot candidate

also throughout

Especially with #2

lots pyrite nuts

(probably – little deep!) and many bare stalks small of cactus collected at least 5 dead "cactus stuffs" logs + 4 branches

Nests taken for pollen samples. (Site has [illegible] 5m ⌀) The same species [illegible] yellow [illegible]

Southwestern [illegible] Plant [illegible] Colorado desert from Nicholas [illegible] under hard [illegible]

one on tree #2. Pits coll'd on head
~~Schistocerca~~ vic #1, the red ants were inside
& clearing it out. The red & black ones
were outside & recently arrived. Some
pale yellow Camponotus, & some black
Camponotus also coll'd, 3 others returned
~ 5-6 next day, they reached summit
over very steep climb on flank here all the
way! (4 hrs on summit) Fine to dry clothes.
Returned next day, in pm, sole peaches
appearance! Nice @ 10 Am, braiding
easier, less swell, all 4 feet ok @ once.
Coast here has Commorants, pelicans,
gannets (2 kinds), penguins, sealions, herons
etc. Plants - all found flowering
@ Cape were visited, except now observed
to Pt Castelo, on hummocks. Visited
esp. Alosanto & Wattheria, & some on
Scaleria.

26 MARCH 1970

FE

Wilson Pressmen

① of leaves = pitcher gets lined yellow

① milky: worms, cells in PM of recent, @ right [illegible]

② red ants in dead sclerotrunk of ant-black ants around, but none of latter on caterpillar on rock, not h.c. 1. ffm.

③ ants - termites. A rotted dead [illegible] Pb [illegible]

⑤ Red mites - from Trigoniaca, NOT Phidogeny [illegible] (No, not on Thrust; hf)

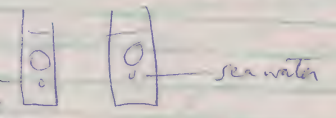
Gonatl. with
L. Polistoides

10 escaped bees

27 MARCH 1970

Expt #
27 Mar 70

Found iguana frocks ~~placed~~
Coll Fernandina 27 mar 70; w/2
km in on N. side.
2 bloated 2 small
(5 total coll'd but 1 dead)
2, (1 ea. bloated & small) to 2 vials



2 min all OK & moving
30 min all OK but moving sluggish, except small in Fur-not moving but arms extended.

24 hrs later both per. dead, salt water was bad legs ⊤ curled. put in alch. w/ dead one.

27 MARCH 1970

28 MARCH 1970

[illegible]

10 [illegible]
[illegible]
[illegible]

[illegible]

29 MARCH 1970 Arrived at Alcedo a little later than we had expected; about 3 hours crossing instead of 2. Upon arrival, I headed up in sneakers, bathing suit & T-shirt, with (no water) Bdex, and collecting kit. I had no watch so I had no idea of time, but I arrived at the cache about 35-40 min later, (my estimate). On the way up and down I noticed many things I had overlooked before, because of my heavy pack and general darkness and misery. The pumice slope is gradual, and few things on it appear alive for the first 15 minutes or so going up; just Scalesia ~affinis and Waltheria, with some Palo Santo. But there is also a ground covering of dead grasses, and some (a few), mostly dead Opuntia (donkeys?), plus Bursera & Croton, Scutia, Asclepias (see below), and a few other plants. The "larch-imitator" is there; so is the 5-petalled ground flower (yellow), and a couple of shrubs I didn't recognize. In general, however, the ground appears barren of life, until you get higher, where the Palo Santo is in leaf (having ∴ gotten some rain earlier). X. darwini is all over, even at the hours (~12³⁰ PM - ~2 PM) I was up there. They were visiting Waltheria and Scalesia only, esp the former. Occasionally I passed a flowering Zygopersicon, but I didn't stay long enough to see these visited (altho X.d. did visit them on Fernandina). I collected

plants and also 3 ♀♀ of Xylocopa darwini; one of the X.d. ♀'s was injured, a natural wound - one metathoracic leg missing. It was interesting that here, in the more open country, Waltheria is even more recumbent, laying branches (with flowers) often flat across the ground. I noticed Phoebis and Danaus flying; finally I saw the Asclepias I had been missing all along - it grows as a vine, coiling around itself into low, scrubby, bush-like heaps, about 3/4 m. high. The lower 'branches' of these heaps were dead. I could find no Danaus eggs, larvae, or pupae, tho about ½ dozen adults were seen flying. In checking under one Asclepias for dormant larvae, (none found) I found a Pheidole nest. (collected some) (that Asclepias was under a Palo Santo). In addition to collecting on the way back, I took some movies, esp. of X.d on Waltheria. I picked up the cache and headed back, putting plants in the plastic bag. On my return, the things in the cache were OK, including my wide-angle lens and the headlamp.

Upon returning, I used Carmen's flippers & mask and went swimming along the rocks to the left of the landing beach at Alcedo. The water was clear and there were a great many fish. (especially the ones seen in large schools at Pta. Espinosa-) pigfish (= Theisl gray with high forehead and yellow tail); an angelfish-like

29 MARCH 1970

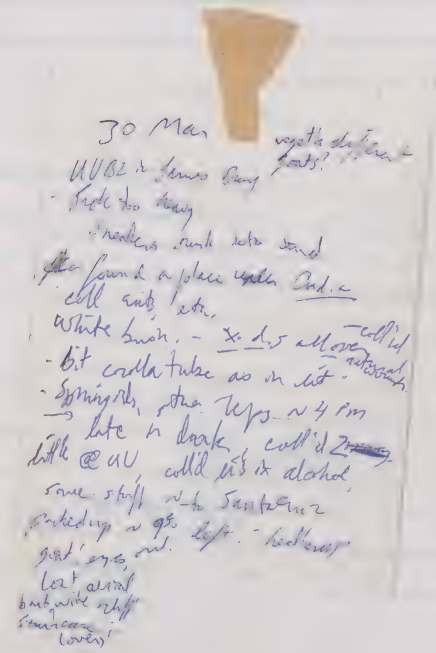
one, in black with yellow fins & tail, and a vertical white lateral stripe; a few small groupers; some sheepsheads; many minnows; and Carmen mentioned that a black-&-yellow fish often nipped you; altho I didn't see any (cleaver-wrasses?).

We had lunch (goat-liver — great!) and headed back towards James Bay. The sea was very rough, especially compared to the morning's calm. Santiago was deep in clouds — it was raining and the rain was almost across the bay. A full double-rainbow crossed the bay. Frank, Rob, & Robin were ashore getting drenched - Fritz picked them up. We had goat-meat for Easter dinner, with Carmen's cake (first cake seen since Cambridge - baked aboard ship, & great). I had intended to go up ashore & blacklight in the transition zone, but the rain put that off till the next day.

30 MARCH 1970 This morning (slept below on Nixe) after breakfast Rob and Frank headed up to try to get as high as possible on Santiago; Robin left with them but said he'd be around for lunch. I went over to pick up my short boots, which were left ashore yesterday morning after blacklighting (28 Mar UV), and to photograph flamingoes, etc. The salt lagoon immediately behind the beach where we landed had about 20-25 flamingoes, plus black-necked stilts and Galapagos ducks; finches and mockingbirds were also abundant. The flamingoes always kept on the far side of the lagoon as I proceeded around. Collected as I went; ~ Tapinoma melanocephala? under mangrove bark, 1.5 m above ground; Thysanura, spiders, etc. also under bark. Collected ticks off a gecko found under bark, and some Gasteracantha in the trees. Filmed flamingoes, also some finches & ducks & sandpipers. The mangroves there were of several types; pencil roots of black mangrove were evident at the lagoon edges; also some white-flowering mangroves (4-petalled) and some with cone-like fruit; No red mangroves noticed. Fritz picked me up at about 10·10³⁰ & we headed back across the bay. I noticed that the mangroves leave a considerable amount of litter, and that they often die, leaving room for many ground insects, but few seen. Perhaps ground is too salty. A great many fiddler crabs were present. All in all, this place reminded me much of the Bay Point area of Florida Bay (Cross Key & viz.),

with low mangroves, fiddler crabs, calmness of water, etc.

The hike up Alcedo in bathing suit left my legs very sunburned. I can hardly bend at the knee without pain.



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Fritz on Apolo; talk later about flies

Birds - Barbs
Mimus
Tern
Vermill. flyc.
finches

∃ (Mar Ferris
an. ~

dry all over = green on top
= lichen ~~ace~~ nonce - to Rob. Fern

flowering = Cordia (2 fl.) w/ [illegible]
Castela, Cryptocarpus, [illegible]
mangrove (black?) - w/ xd
& coll'd.

Xd nest in Cordia - ♂ escaped
no bee obviously visible. Beach
w/ Cryptocarpus + mangrove,
dead seatimo + penguin
Tall [illegible] Scorpion - ? unapply.
walked around beach by [illegible]
Grasshoppers. Birds: dove, [illegible]

2 APRIL 1970

(See also p. 210)

2 APRIL 1970 KEY TO FILM MAILER NUMBERS (MOTION PICTURE)

B	460495	#9	S. PLAZA - crabs, sealions, birds	
B	460496	#10	S. PLAZA	
B	460497	#11	S. PLAZA	
B	460498	#12	S. PLAZA (7 MAR '70)	
B	460499	#13	X.d. ♂ + ♀, [end at 16 Mar '70]	
B	460500		to Pta Espinosa #1	[#14]
B	460501		Pta Espinosa #2	[#15]
B	460502		Pta Espinosa #3	[#16]
B	460503		Pta Espinosa #4	[#17]
B	460504		Pta Espinosa #5	[#18]
B	460505		end Pta Espinosa → Santiago; porpoises off Alcedo	[#19]
B	460506		Santiago → Alcedo; porpoises. X.d. on Alcedo flowers	[#20]
B	460507		[29 Mar] Santiago; flamingoes	[#21]
B	460508		Jervis → Sombrero Chino → Duncan	[#22]
B	460509		Duncan	[#23]

All above addressed to SILBERGLIED (HARVARD GO-LABS)
16 DIVINITY AVE
CAMBRIDGE - MASS
02138

2 APRIL 1970 | KEY TO 35 mm COLOR FILM MAILER NUMBERS

(addressed same as film on p. 201)

H 484993	EH	135-20	Caseta	
H 484992	KX	135-20	Plaza	
H 484930	K	135-20	Caseta	
H 484929	EH	135-20	Caseta - OWL - push to ASA=400.	
H 484932	KX	135-20	Plaza	
H 484928	KX	135-20	Plaza	
H 484933	KX	135-20	Plaza	
H 484972	EH	135-20	(before Mar. 19)	
H 484973	KX	135-20	Caseta	
H 484975	K	135-20	tour 1	(= Alcedo - Fernandina, - Santiago, -
H 484976	K	135-20	tour 1	Rábida, - Sombrero Chino - Pinzon)
H 484974	K	135-20	tour 1,	(- Duncan)
C 722209	K	135-36	tour 1	(mailer below enclosed) (Alcedo?)
C 710612	(enclosed to cover cost of 36-exp. roll above)			
H 308470	K	135-20	tour 1	
H 308272	K	135-20	tour 1	
H 484980	K	135-20	tour 1	
C 722213	K	135-20	tour 1	
G 928877	K	135-20	tour 1	(- Duncan)
G 928876	KX	135-20	tour 1	
H 484977	KX	135-20	tour 1	
H 484978	EH	135-20	tour 1	
H 484979	EH	135-20	tour 1	
H 484981	EH	135-20	tour 1	
H 484994	K	135-20	?	(before Mar 19 - found in large camera case)

CHARLES DARWIN RESEARCH STATION
SANTA CRUZ, GALAPAGOS ISLANDS
[illegible]
21 MAR 1970

KODAK PARK
ROCHESTER NEW YORK

TO WHOM IT MAY CONCERN:

I AM A BIOLOGIST WORKING IN THE GALAPAGOS ISLANDS. HERE I HAVE NO OPPORTUNITY TO PURCHASE A "SPECIAL PROCESSING" ENVELOPE. PLEASE PUSH THE DEVELOPMENT OF THIS ROLL TO ASA=400, AND BILL ME AT:

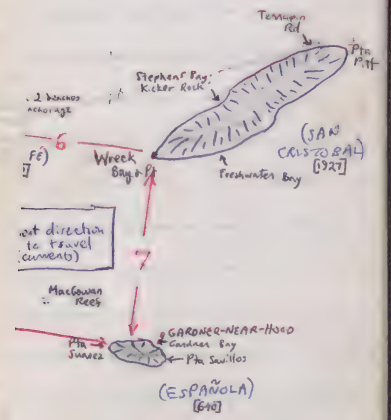
ROBERT SNIEGLIED
HARVARD UNIVERSITY BIOLOGY LABS
16 DIVINITY AVENUE
CAMBRIDGE [illegible] USA

I WOULD AWAIT MY RETURN TO THE STATES TO HAVE THIS DEVELOPED, BUT I HAVE NO REFRIGERATION AVAILABLE RIGHT NOW, AND WE ARE ON THE EQUATOR — HOT + HUMID.

Thank you for your consideration

Robert Snieglied
ROBERT SNIEGLIED

ies in hours, slight overestimate,
: trip ahead ~ xx'



; rains, — then green.

Lent" [due to man]

ers and swells, hard to land

:ean; can't land. Pta Pitt: red-footed boobies
El Frogueno?
do? El Junco? UVBL, etc.]

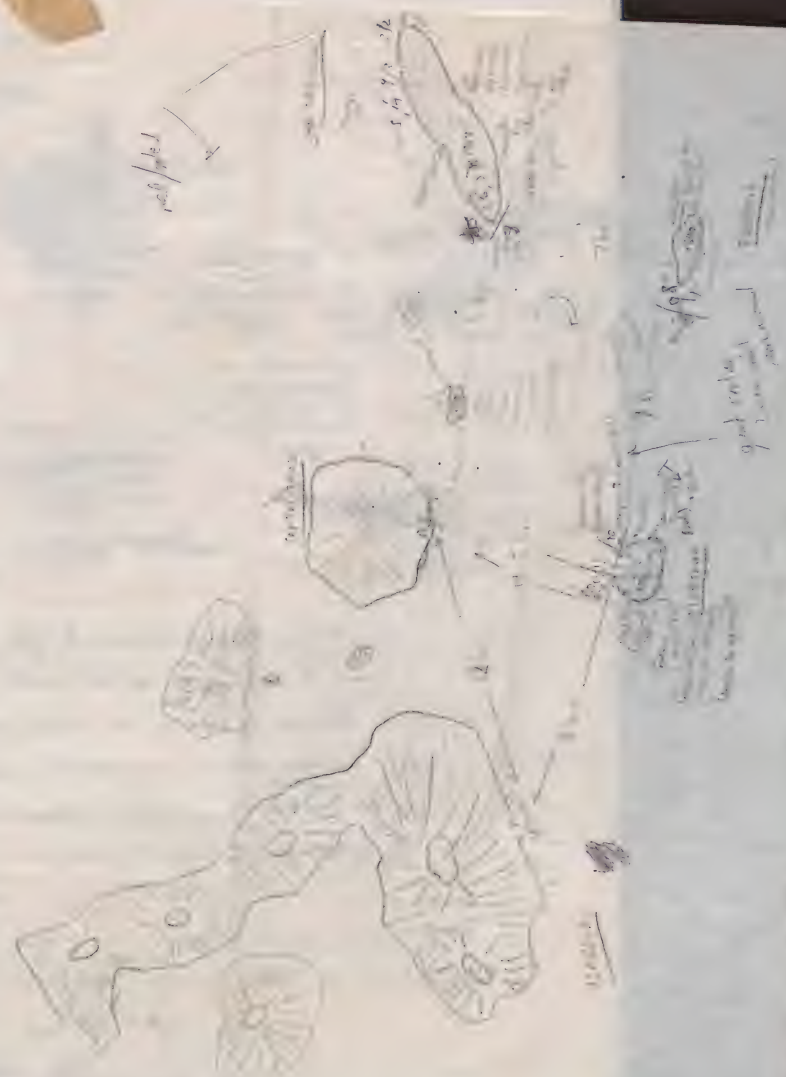
; see mockingbirds — tame!

no. Floreana: red footed boobies

; (Can't [illegible] worried of 2 men')

Black Beach: settlement; Wittmers (food); donkey for equipment?

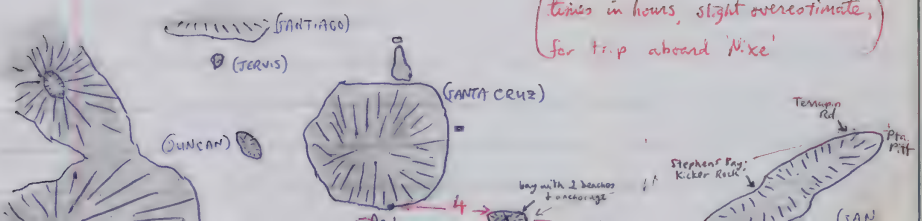
[Gaston says "nothing special — close to farms + water"]

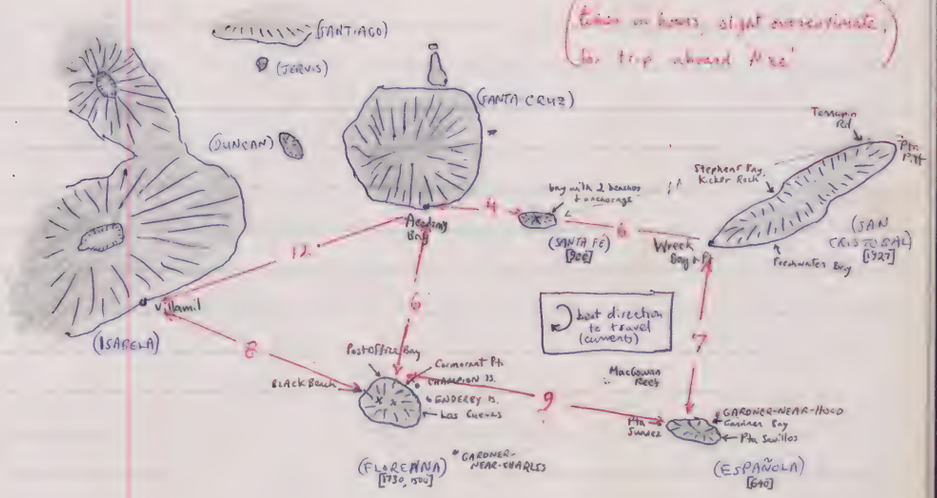


Black Beach: settlement; Wittmers (food); donkey for equipment!

[Briton says nothing special – close to farms + water]

(times in hours, slight overestimate, for trip aboard 'Nixe')





SANTA FE: most cactus; dry, low; except when rains, – then green.

Fritz says "island that has changed least" [due to man]

SAN CRISTOBAL: SE shore open to sea; big breakers and swells, hard to land

Freshwater Bay = freshwater runs into ocean; can't land. Pta Pitt: red-footed booby

Wreck Bay – supplies? [hwy to highlands? El Junco? El Progreso? UVBL, etc.]

ESPAÑOLA: Albatrosses on S. shore, all along it.; see mockingbirds – tame!

MACGOWAN REEF: breakers.

FLOREANA: Las Cuevas: scoria

Champion I: mocking birds, good [illegible] (Cut [illegible] of 2 men)

Cormorant Pt: lagoon with flamingos

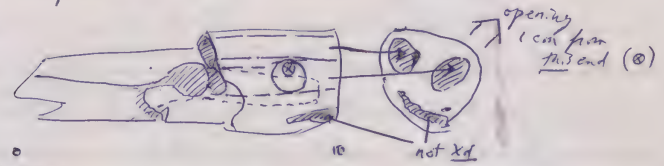
Post Office Bay: Barrel

Black Beach: settlement; Witmers (food); donkey for equipment?

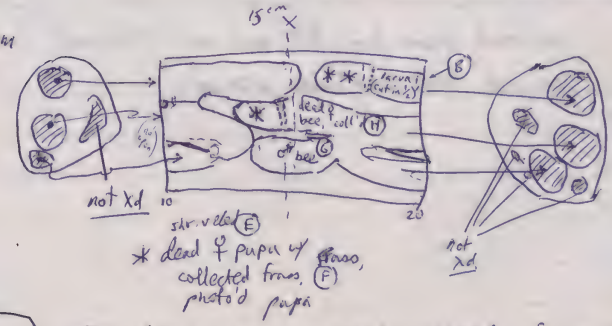
[Fritz says "nothing special – close to farms & water"]

5 April 1970 Fernandina. nest 1 opened, in >50 cm. long piece of dead Palo Santo [photographed on Pan X], collected at site of Mar. 26, north slope on border of old lava (near tubes & 3 small cones) and black flow, about 1 hour in. Wood infested also with tunnels of termites (collected) (A)

0-10 cm



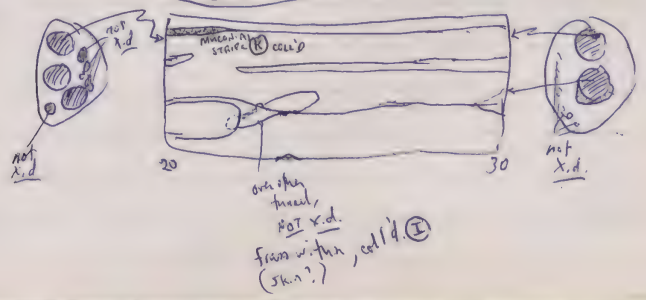
10-20 cm



* dead ♀ pupa w/ frass, collected from, (F) photo'd pupa

20-30 cm

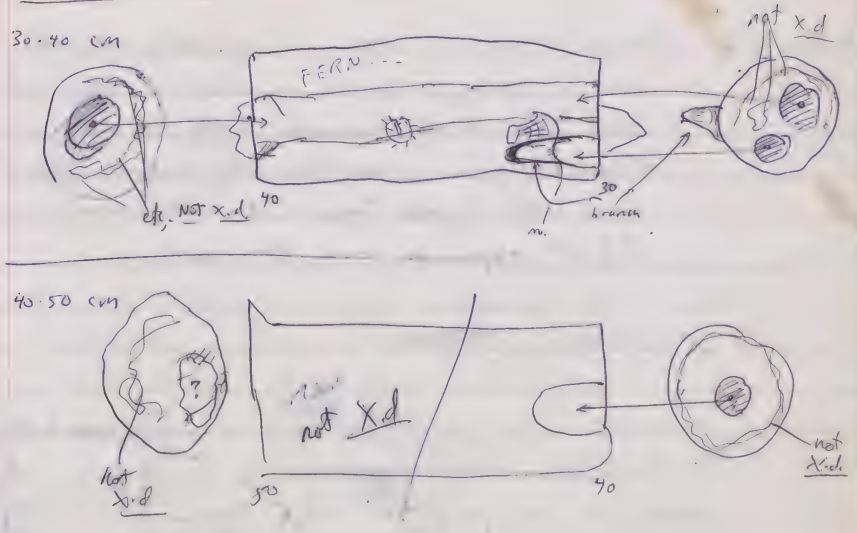
** live ♀ pupa, collected in alcohol, frass collected (C) (D)



Specimens from Fernandina Nest #1 [FE-N1-A]

A termites (0-10 cm) [Trogiomus @ CDRS ate some] } ETOH ½ DR. VIAL
B larva, cut in ½, by sawing (20 cm)
C live ♀ pupa, in alcohol, from closed cell (15-20 cm)
D frass of ♂ pupal cell, with cap (15-20 cm)
E shriveled, dead pupa (10-15 cm)
F frass from E's pupal cell (15-20 cm)
G. ♂ X. d. adult, alive & buzzing (15 cm) PINNED
H. ♀ X. d. adult, found dead (15 cm) PINNED
I (Skin?) frass in NON-X. d tunnel (~25 cm) (DRY, ½ DR. VIAL)
J Additional frass from E's pupal cell (15-20 cm) GENI-VIAL
K muconial stripe along tunnel (@ 20 cm)

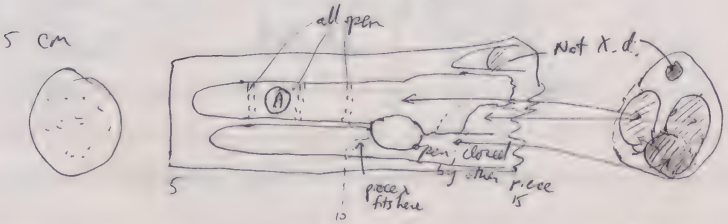
Fernandina Nest 1



6 APRIL 1970 TAGUS COVE NEST opened, 32 cm long in what was a standing branch of an unidentified plant, but which most closely resembles Cordia to my eye. Collected March 22 at UVBL site on about 100 ft. behind UVBL towards Tagus Crater Lake. Wood did not appear to house other insects.

0 – 5 cm: NOTHING.

5-15 cm



10 – 32 cm

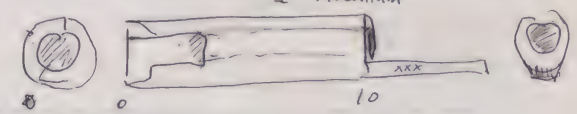
Specimens from Tagus Cove Nest [TC-N-A]

A Dried remains of ♀ bee, adult, in region of cells (5-8 cm)
B muconal smear found at 32 cm end (35 cm)
C

#2 <50 cm long

6 APR 70 ALCEDO NEST opened; curved nest from arid zone on northwest side, about 15-20 minutes from Urvina Bay. In an arched woodstock about 1 ft above ground, in a horizontal position. Bee seen to enter and hole plugged; loud buzzing thereafter but specimen got out and away aboard "Nixe". Collected 22 Mar 1970. (at the place where Frank felt ill) – first noticed (Credit to:) Robin E. ///NOTE H – Pupa not labelled in Photo. I – Meconium " " " "///

0-10 cm



10-20 cm

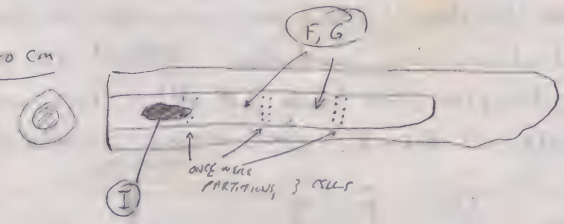
20-30 cm

30-40 cm

6 APRIL 1970 SPECIMENS FROM ALCEDO NEST #2 [AL-N2-A]

A	PUPA		(20 cm)	EtOH
B	MITES	FROM A's PUPAL CELL	(20 cm)	EtOH (in C)
C	FRASS		(20 cm)	½ DR. VIAL
D	MITES	FROM H's PUPAL CELL	(25 cm)	EtOH (in E)
E	FRASS		(25 cm)	½ DR. VIAL
F	♀ BEE		(42 cm)	PINNED
G	♀ BEE		(45 cm)	PINNED
H.	PUPA (not labelled in photo!)		(25 cm)	EtOH
I	MECONIUM (not labelled in photo		(45 cm)	½ DR. VIAL [w/ SMA 24 VIAL]

40-50 cm

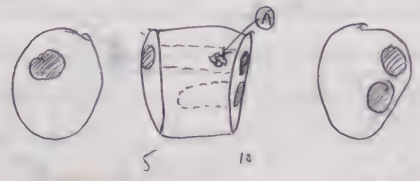


6 APRIL 1970 SANTIAGO NEST OPENED; in waist-high Cordia branch, dead but still attached to tree, at UVBL site in front of Sugarloaf, James Bay. 30 MAR 70. SILBERGLEED. Located when ♀ bee observed to fly in, near dusk.

18 APRIL 1970 SANTIAGO NEST SPECIMENS [JB-N-A]

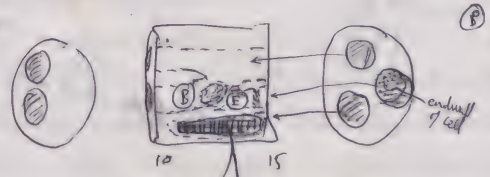
0-5 cm

5-10 cm



(A) = Particulate matter, pupal skin? (ENVELOPE) (9 cm)

10-15 cm



(B) SHRIVELED GYNANDROMORPH? PUPA, ♂ LEFT, ♀ RIGHT (EtOH) (12 cm)

(C) SOLIDLY PACKED MATERIAL, UNIDENTIFIABLE (13 cm) (ENVELOPE)

(D) FRASS INCL. 'POLLEN PELLETS' (13 cm) (GEM-VIAL IN ½ DR. VIAL)

(E) ENDWALLS AND POLLEN WITH MIXED WOOD PARTICLES AND LARVA OF SOMETHING (COLEOPTERA?) PLUS SHRIVELED SKIN(?)S? OF X. d. (?), all of which was hidden in this daily-capped passage. MITES TOO. (14 cm)

E_1 – ENDWALLS (Envelope)

E_2 – MITES EtOH (GEM-VIAL w/ E_3) [INSECTS (ANT, BUG) IN WITH MITES AT LITE, STA. CRUZ, LOBS 6 APR 70.]

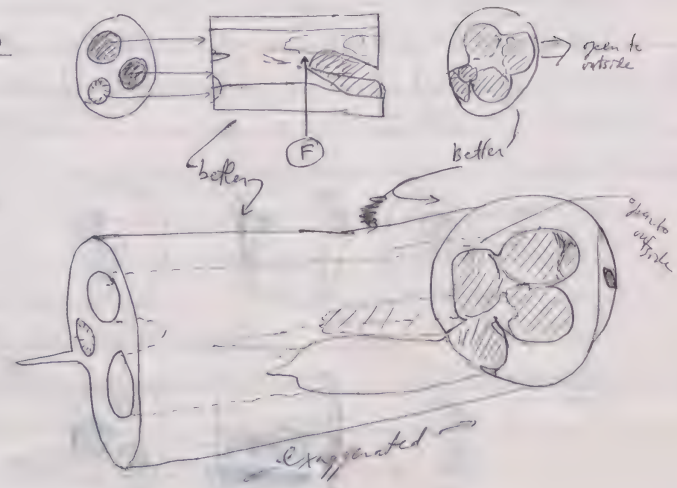
E_3 – LARVA EtOH (GEM-VIAL w/ E_2 IN ½ DR. VIAL)

E_4 – POLLEN, WOOD (½ DR. VIAL)

E_5 – SKINS (½ DR. VIAL EtOH)

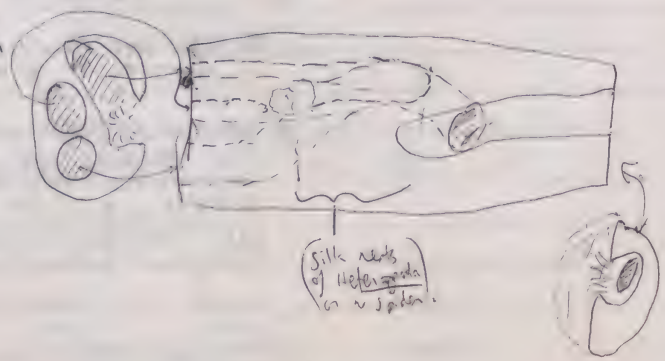
6 APRIL 1970 | SANTIAGO NEST, CONT'D

15-20 cm



(F) = ♀ Bee, in parts (adult), dead. [ENVELOPE]

20-30 cm



7 APRIL 1970 | ALCEDO NEST #1 opened; collected at northwestern rim of Alcedo in firewood, species unidentified; (located as buzzing in fire!), on side of rim facing Fernandina 21 Mar. 1970. Silberglied. Piece > 35 cm long; openings at 25 cm and into stock (missing) at 35 cm.

3 bees which emerged (or were present within when collected) were prevented from escaping; later found near chewed plug at c. 25, 30, 22 cm. — these are (A) [PINNED] and (D) [PINNED], and (E) [PINNED] respectively. *

SPECIMENS from Alcedo NEST #1

A Bee (adult ♀) in nest. c. 25 cm (see above) (PINNED) *

B Woodboring larvae in opening eaten into heartwood at 10 cm. (in ½ DR VIAL)

C Frass found at end of tunnel for ~3-4 cm around 20 cm mark, mixed with cut pieces of the plastic bag, (which I used to plug holes; green in color), also wood particles and orange pollen granules. (in 2 ½-DR. VIALS)

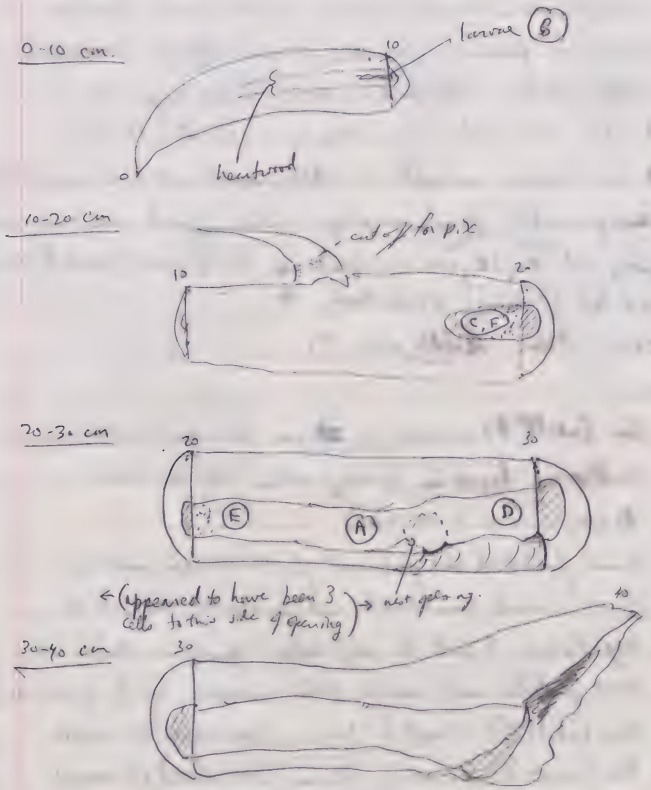
D. Bee (adult ♀) in nest c. 30 cm. (see above) (PINNED) *

E. Bee (adult ♀) in nest c. 22 cm (see above) (PINNED) *

F. Psocids coll. in frass (C), [may not be even from nest, or even from Alcedo]

* A has chewed wing margin (slight), may be parent nest-tender. B, C, have intact wing margins, may be freshly emerged specimens.

7 APR 1970 ALCEDO NEST #1



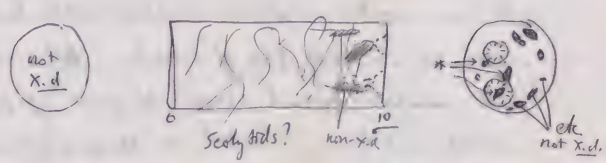
7 APR 1970 Fernandina nest, #3 A, B, C. photographed. A was many, many tunnels. Its volume, w/ + w/o air in tunnels, was measured by immersion in plastic bag + without. with air, cylinder 2 cm (height) × 25.5 cm. DIAM $V = \pi r^2 h = \pi (12.75\ cm^2)\ 2\ cm$
without air, cylinder 0.9 cm × 25.5 cm DIAM $V = \pi (12.75\ cm^2)(.9\ cm)$
B was another cylinder of dead Palo Santo. C was a chip of side of trunk. All were not carefully opened, since all ends of passages were visible. Collected in same place as other Fernandina nests.

JERUS NEST opened; in piece of dead Palo Santo, diagonal in nature, knee high, on slope I climbed behind lagoon; 31 Mar 1970. Silberglid Piece is 45 cm long. To date 5 ♀♀ emerged from this one piece. Openings at 17 and 31 cm, and cell of additional tunnels, connected interally, exposed in broken end at 37 cm.
During the opening of this piece, buzzing of >1 bees heard. Parts of a dead bee (♀) and a pupal skin (A, ENVELOPE) fell out of hole at 37 cm. Frass that contained pellets (B), (½ DR. VIAL) fell out of a hole (which?). Parts of pollen ball fell out with frass of B (C, genital in D), and a pollen ball fell out of hole at 17 cm later (D, ½ DR. VIAL) (also pupal skin in D)

JERVIS NEST, CONT'D

A ♀ bee, adult & freshly from pupa, was sawn through & mutilated (E, EtOH) at 10 cm cut. It made no noise.

0-10 cm



* non-X.d. holes filled w/ wood (& stuff) by X.d. also some at end of lower tunnel @ 10 cm

During cutting of 20 cm cut, ♀ was isolated (adult) distally in dead-end (?) cell at 20 cm. Alive & buzzing, dust covered but apparently not hurt. (F, pinned)

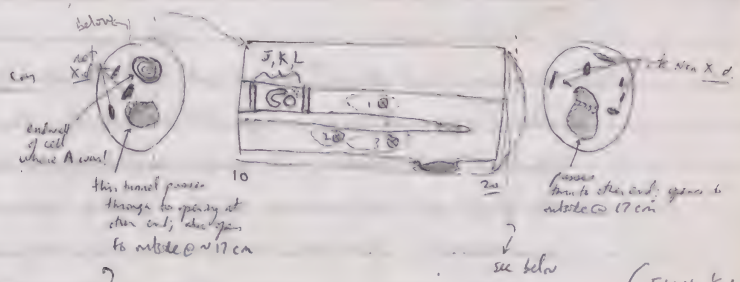
During cutting of 30 cm cut, ♀ was found in tunnel deep in at about 25 cm. (G, Pinned)

During cutting of 40 cm cut, a ♀ adult was found (H, pinned) in dead-end cell @ end of tunnel, tunnel in 30-40 cm piece, cell end in 40-45 cm piece. These ♀♀ that I isolate at cell ends are curled up in defensive attitude & usually dust-covered.

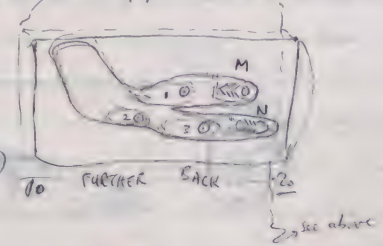
Termites found within (non-X.d holes), esp in section { 0-6 cm. / 20-30 cm (I, EtOH, ½ dr vial)

7 APR 1970 JERVIS NEST, CONT'D

10-20 cm

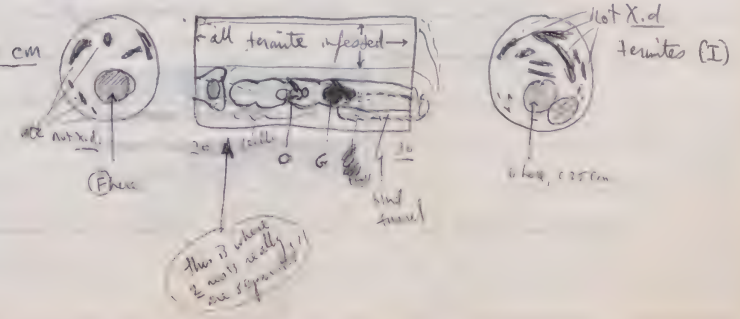


J larva
K pollen ball
L. pollen pellets
} found in cell at 11 cm, proximal to cell where A was. (EtOH, ½ dr. vial; genitivial in K)



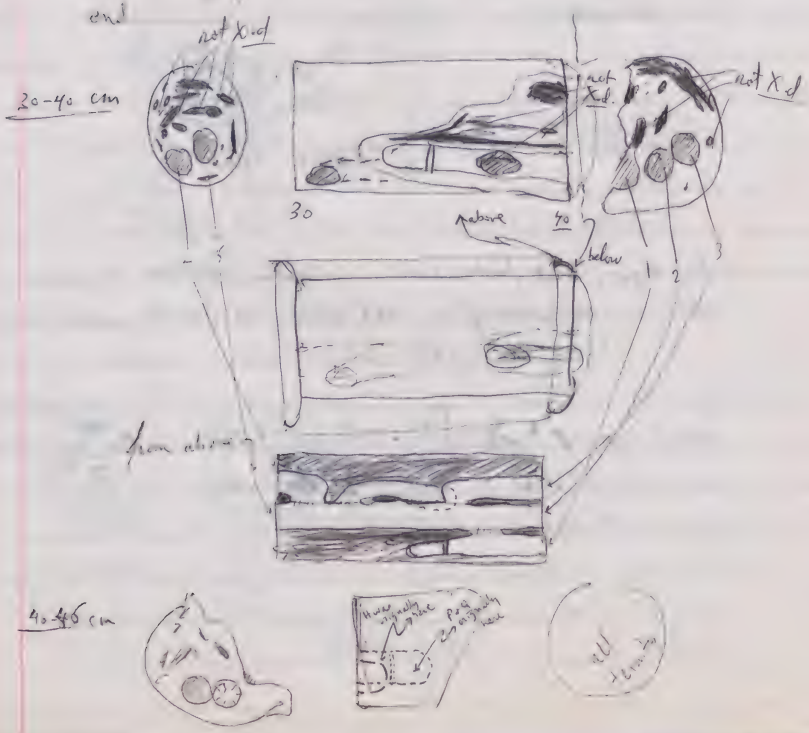
M, N } Pupae, found further back in 10-20 cm section than diagram, M definitely has held dished; N fell out, may be wrong point!? (EtOH, tube, w/ A).

20-30 cm



7 MAR 1970 JERUS VEST. cont'd

Upon removing G, a ♂ was found (O) behind it (finned); also, upon removing tape to remove H, it was found that it had broken into cell immediately distal, c. 44 cm. A pupa (P) with frass + pollen-pellets (Q) were there (P in alcohol, Q in ½ dr. vial) these were pushed into place where H was, H was in the cell of ~~[illegible]~~ 1, and was trying (& had succeeded in part) to cut out @ 45 cm end



7 MAR 1970 Tonight Daniel [illegible] tell us that he [illegible] brought some oranges ~~[illegible]~~ on a field trip from Villamil up Serra Negra; in the pampas he [illegible] [illegible] while eating the oranges. Within a few moments a Xylocopa d., flying along, investigated the peels in hovering flight. (This sounds similar to the investigation of the "Crest" tube at the Caseta — see p.). He said the date was , and that was flowering there.

Mr. Weber also showed me some of the insects he has been collecting here over a period of several years, most in alcohol or formol. He is, of course, most interested in the Orchid visitors (pollinators?) — all of these I examined were small Syrphids, incl. the characteristic small widespread horsefly w/ a reticulate yellow-&-black abdomen. He had Odontomachus from indoors in a cabin on Sierra Negra. — he thought it was large for a Galapagos ant. (a large carpenter ant). Also other insects — should be looked through & determined, since he's been many places here & has some quite interesting stuff — Chrysomelids, (& Ophion,) he says are common. Also has some Diptera from

8 April 1970 Expenses [8 Apr. 1970] Pack from Mr. Jahn $30.00 U.S. (trav. chs)
(included 1 gal. canteen, steaps, cooking kit, can)
[8 Apr. 1970] Laundry $ 32.00 (sucres)
[8 Apr. 1970] Raisins, toothbrush + paste (at Hersen) $ 66.00 (sucres)
[8 Apr. 1970] Batteries - to repl. Robs. (Penny) $ 7.00 (sucres)
[6 Apr. 1970] Food @ Station (bill) $ 35.00 U.S. (trav. chs)

8 April 1970 Hank and Agnes Jahn [Peace Corps; staying at Cuptania, Santa Cruz]
161 D Street
Chula Vista, California 92010

Mark Deysup; Peace Corps; Quito, Ecuador

9 MAR 1970 | PHOTOS OF LIFE-CYCLE (Jerry's specimens usually used)

(PAN X & KODA II used; @ f/22 w/ 1 full set of tubes. lens [2.8/50] set at ∞; Flash held approx. @ camera (neg.) and set at F = 0, 33, 66, 100)

1) Pinnate adult, ♀, JE-N-P
   a) ventral, b) dorsal, c) left lateral
2) Pupa, white, eyes dark, JE-N-N
   a) ventral b) dorsal c) lateral
3) Larva, Pollen mass, & pollen pellets: (respectively) JE-N-J, P, B.
   a) lateral
4) Most of Cycle, with all of 3), plus 1) and 2), plus a ♂, FE-N4 (escapee) and ♀, JE-N-H.
5) ♂ head (FE-N4) w/ & w/o flash diffused by mirror from sheet

(light let in on roll of Koda II, (Cor 2 in taken again on new roll?)

The other day Roger Perry described certain things seen in the Fernandina caldera. One interesting item was that early in the morning, just before dawn, and before one could see clearly, a humming sound was heard all around them. (Shipton, Perry & Calapucho). They were midges (?) rising from the lake. The sound mystified them at first.

NEEDED: Photos of meconium, egg, incipient nests, etc.

9 March 1970 | Tonight Dr. DeVries mentioned that he has seen ♂ X.d. recently on Barrington. (He also mentioned that Calosoma sp. are found in the pellets of the short-eared owl here. This was after a discussion with him on Carabid defense.) (He also mentioned that lycosids were abundant near a tide pool on the far side of the station, but scarce where he is; [he intends to make/release some near his cabin – the first towards town from the station, small & pink, atop a hillock].)
The X.d. ♂ (above) was over a Cordia lutea ("manzanillo") tree, pick in S.-central part of the island. Time of day not remembered, but in bright sunlight. (First or second of April, 1970)

Dr. DeVries has not seen the Lee at Tower, where he spent 3 full days, crossing the island. The island had had rain, Palo Santo was in full flower. This was March 5-7, 1970.

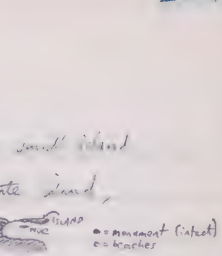
I worked this evening on developing films (Pan X) of life cycle, maps, etc., mounting & labelling material, & cleaning up the lab. I also wrote a letter to Wilson, in part.

(10 Mar. 1970) At dawn, Fritz picked me up – I had no sleep. Went to sleep aboard 'Nixe' just after sunrise. a peculiar sunrise (bright red) Broke at Barrington

Itinerary planned aboard Nixe' 10 Mar 1970 (map on p. 205)

Day	Date		Ten.	Leave	Run
1	10 Mar	F	~~Acad. Bay~~	~~Barn~~ Acad. Bay	Ter. Rd.
2	11	S	~~Barn. (Mon)~~	Barn.	Pta Pitt
3	12	Su		Pta Pitt	Ter. Rd.
4	13	M		Ter. Rd.	Darwin Site
5	14	Tu		Darwin Site	Wreck Bay
6	15	W		Above Wreck Bay	
7	16	Th			
8	17	F		Wreck Bay	Gardner ~~Pta Suarez~~
9	18	Sa		Gardner – Hood	– Pta Suarez
10	19	Su		Suarez (early Mon) ~~Hood~~	Las Grietas
11	20	M		Kleana	
12	21	T			
13	22	W			
14	23	Th		Kleana	Acad. Bay

10 March 1970 In the morning we had wonderful and "explored" a small island at the anchorage on Santa Fé. It is an elongate island, partly enclosing the bay at the anchorage.

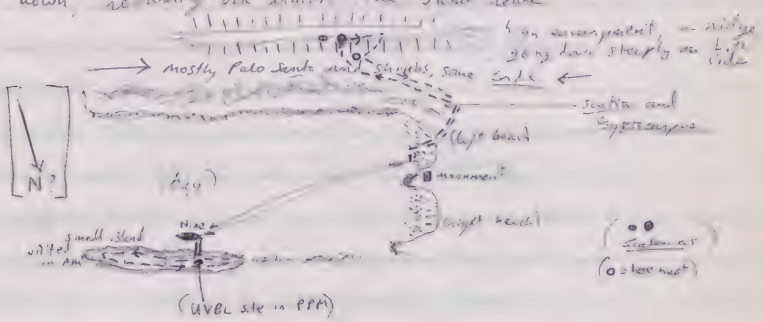


It is so low that sea lions must surely get in all parts, since the polished guano appears on rocks everywhere (n.s.). Galápagos doves very abundant, also finches, booby, pelicans, Tropicbirds. Land Iguanas, and native (Robin E.) rats and introduced goats do not occur on the little island. Vegetation is Sesuvium, Maytenus, Opuntia, Scutia, Cryptocarpus, Croton, Portulaca (coll?, all coll'd, some photog'd. Flowering: Sesuvium, Maytenus, Opuntia (2 flowers seen on one of many (>100) non-flowering fine cacti) Cryptocarpus. Most Portulaca without leaves, same for a lot of Croton. X.d. observed to visit Sesuvium (1 ♀ coll'd; corbae – bases heavily pollen-covered) and Opuntia (Frank S. took specimen of latter). Vegetation extremely lush relative to land just across the bay. Parietochloa noticed but not coll'd; Monanthium abundant on an Opuntia flower (coll'd).

After lunch, and the working out of an itenerary for this trip, (p. 236), we went ashore on the ~~west~~ left-hand beach (left of monument, as you face it). Contrast with small island incredible — no green vegetation except Scutia and Lycopersicum — no Sesuvium or Maytenus seen. Some dry grasses in brownish, siltable soil. The landing place at the beach is the outflow plain of some gullies; outwash from a year ago still made the water there turbid. A high escarpment at the left had some spots of bright green; these were the species of Scalesia (coll'd. photo'd) found here, w.th highly divided leaves, a sweet aroma, and ragless white flowers, c. 1 cm. across. The fact that they are found only on cliff-faces would make one think that predation (here by goats) limits them to such a place, but Fritz tells me they grow there (only) even in the absence of goats. Since I saw some large droppings near the tree I climbed to, and in easy access of it, this may be correct. The other vegetation there is that grey ground cover seen on Santiago and much Cordia lutea (latter flowering), X.d. was seen at Scalesia and Cordia here, the former by myself and Robin, the latter by Rob Smith.

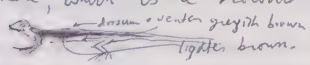
The odor of Scalesia certainly may be used by the bees — you can smell it many yards away.

I walked from the beach across to the escarpment on the left, up it, along it a short distance, and back down, returning via almost the same route.



I looked out of the way for X.d. nests, not finding any in the great many Palo Santo looked at. Finally, on the way back, I located one nest in a single branch of a large, entirely dead Palo Santo, similar to a great many other such trees looked at. A single ♀ left the nest during removal, it flew around, then disappeared, returned within 2 minutes & inspected everything in the tree, including the 'imaginary' missing branch. The nest opening was about 1½ in. high, the branch at c. 45°. All tunneled wood (whole nest) collected, about 4 in.

10 Mar. 1970 During search in dead Palo Santo & under bark, I collected some Curculiodo, a Scorpion, psocids, & misc. other insects. The X.d. nest was in a termite-infested tree, with many alates, these collected (small, yellowish species); also other termites collected. No mites found on Tropidurus here, which is a brownish-er animal, laterally in strips



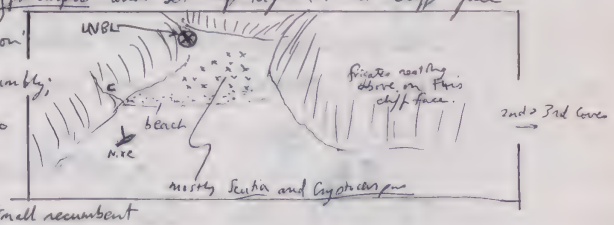
. Mites were, however, collected on one of 2 Schistocerca ♀♀ (?) collected; they were on the wing membranes, thorax & head. The Schistocerca here is a brightly-colored one.

In the evening, after dusk, set up UVBL in place indicated (p.239 map) on small island. Used regular light too, and to look around. Some trouble w/ UVBL ignition and intensity. Poorest collecting seen in Galápagos! - Few moths, some Myrmeleonids & a cleid. Got Tenebs, Paratrechina on ground at night; latter running furiously in trails.

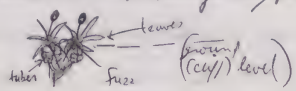
11 Mar. 1970 Left Barrington early in the morning for Pta. Pitt, San Cristobal at breakfast, Carmen talked about need for project motive, and kill-stone mentalit, in local people (& people in general). Told story of local boy throwing stone at Tortuga Bay (with Pritchard & delVecchio).

Arrived at Punta Pitt late in afternoon; anchored in cove between steep hills/cliffs for night. Red-footed boobies seen; frigates abundant, some ♂♂ in courtship color red & distended, wings back, make noises when ♀♀ approached. Most frigate nests high in vegetation hanging off cliff faces.

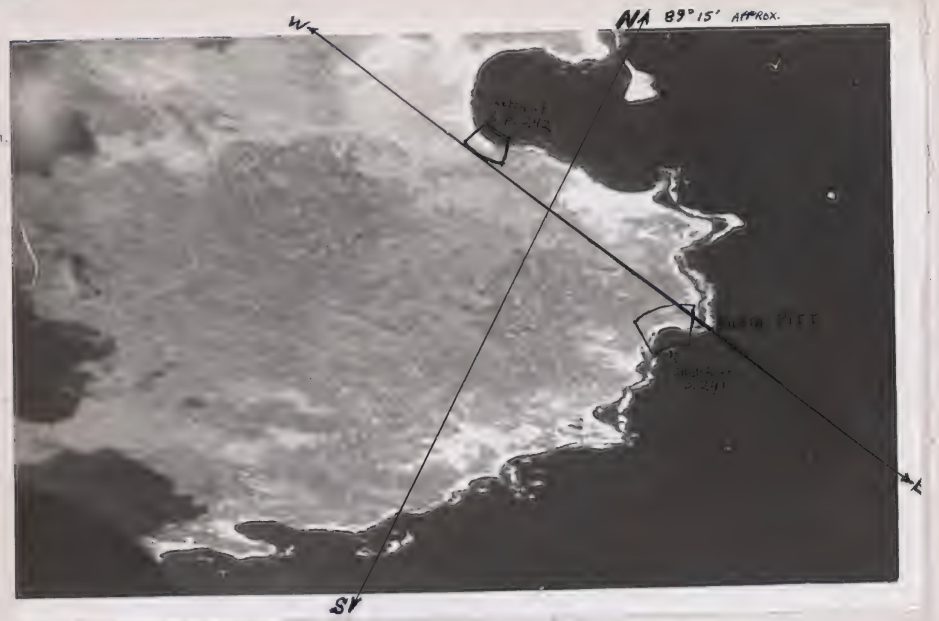
Went ashore with UVBL - (many sea lions) went back past Scutia and Cryptocarpus and set up light(s) at cliff face back in 'canyon'. Rock very crumbly; tied ropes to vegetation of cliff face (small recumbent plants) with rock edges as supports. UVBL worked very poorly, set up 25w. visible bulb & returned after dinner.



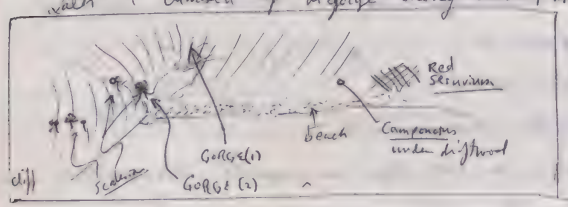
Very little material; some moths, yes, many myrmeleonids, 2 large hemerobiids & 1 very small one, 2 ♂♂ mutillids. Collected a few plants, incl. a very strange ~~Compositae~~ Aitemanthera! (C above) in cliff face above beach.



12 Mar.



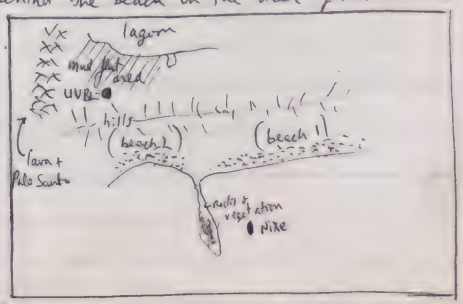
the gorge. Camponotus beneath balsa | driftwood on beach.
Later I climbed up in gorge (2) along beach, where



Several large Scaevolas grew quite low. I climbed up this gorge quite high, perhaps 2-300 feet. It is easy climing where the erosion has eliminated all the loose, gravely material and exposed an almost polished bedrock. Finally I got to a place where I couldn't climb any more or crossed gorge, and had to get up on one of the edges to see out. Here I had to climb perhaps 15-20 feet over

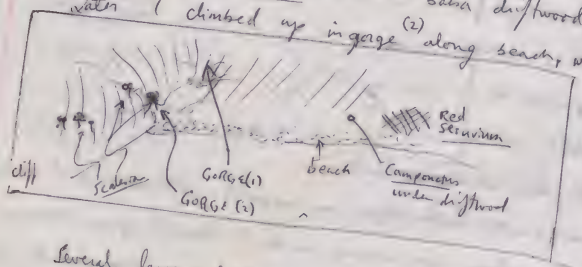
loose, gravely, weathered material on about a 60-70° slope; there were no hand or foot-holds; I fell down several times before reaching top. Took panorama w/ wide angle, also (probably M.G.) movie film on roll "put in at Duncan." On way up + down I had several falls; in one my camera fell with the lower lens down; haze 2A filter smashed (pix); also fell, flat, damaged waist + back (minor) + knee (major). Later collected plants on way down; scaleaceae, also some plant as seen flowering in James Bay, but not flowering here. At coast, investigated an oystercatcher's nest.

After noon we left for Terrapin Road area; anchored in a cove near Pan d'Azucar, a tall, steep hill. Rocks of 2nd small cove to left. Others went up to tortoise area, about 3 hours in, past Pan d'Azucar, near the middle of the island, where they saw about 30 tortoises. I set up the light(s) at a mud flat in a lagoon, behind the beach in the area of the second small cove. Mud flats covered with Sesuvium, with rocks to left covered w/ Palo Santo. Beach area with much Cryptocarpus, some shrubs of a Graculaceous plant, some long



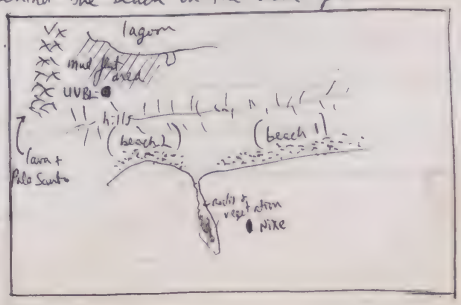
10 Mar. 1970

12 Mar. 1970 Moved from end cove at Punta Pitt to 3rd cove at beach (opposite island upon which Carmen said Petreb rested). Went ashore and examined an area with very bright red Sesuvium; then back inland and up a small gorge (1) collecting plants. Palo Santo in the gorge in fruit, Scalesia in flower. This Scalesia had white, rayless flowers; leaves divided but not as finely so as Barrington or Duncan. Many other plants; Castela, Scutia, Cryptocarpus, Sesuvium, Cordia, Croton, misc. small ground plants, incl. one similar to a miniature, clustered Jaroea. Collected a large centipede under a Palo Santo beneath a rock up the gorge. Camponotus beneath balsa driftwood on beach. Later I climbed up in gorge (2) along beach, where



Several large Scalesias grew quite low. I climbed up this gorge quite high, perhaps 2-300 feet. It is easy climbing where the erosion has eliminated all the loose, gravelly material and exposed an almost polished bedrock. Finally I got to a place where I couldn't climb any more or evaded gorge, and had to get up on one of the edges to see out. Here I had to climb perhaps 15-20 feet over

cove near Pan d'Azucar, a tall, steep hill. Rocks & 2nd small cove to left. Others went up to tortoise area, about 3 hours in, past Pan d'Azucar, near the middle of the island, where they saw about 30 tortoises. I set up the light(s) at a mud flat in a lagoon, behind the beach in the area of the second small cove. Mud flats covered with Sesuvium, with rocks to left covered w/ Palo Santo. Beach area with much Cryptocarpus, some shrubs of a Caesalpiniaceous plant, some long



12 Apr 1970

vines, etc, etc. Sand under bushes on dunes @ beach & behind with many myrmelonid larval pits. Looked around after setting up UV02; then turned on reg. lite (poorly working UV) – very little later when returned after dinner.

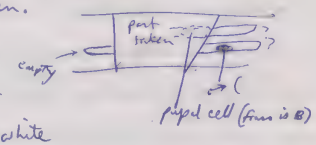
13 Apr. 1970 | In the morning, after breakfast, I followed some donkey trails from the beach inland, to the area (indicated on pp. 249-250) where I located Xylocopa nests in a Palo Santo. On Castela galapagensis (flowering) I collected a X. d. ♀. The vegetation, dry most of the way (except for the lagoon area = Sesuvium, etc.), consisted of halophytes & strange plants near the shore, e.g., a Crassulaceous plant (p. 243), etc. — then becoming a mixed arid forest of Palo Santo and Croton

13 APR 1970

NEST 1 (Tempisque Road) in thin branch of dead Palo Santo c. 3 m high, in lava flow area c. ½ km in on north side of lagoon; tree standing near lava flow that had low point with dry, algae-covered rocks
2 ♀♀ escaped; one was recaptured (2nd) = TR-N1-A

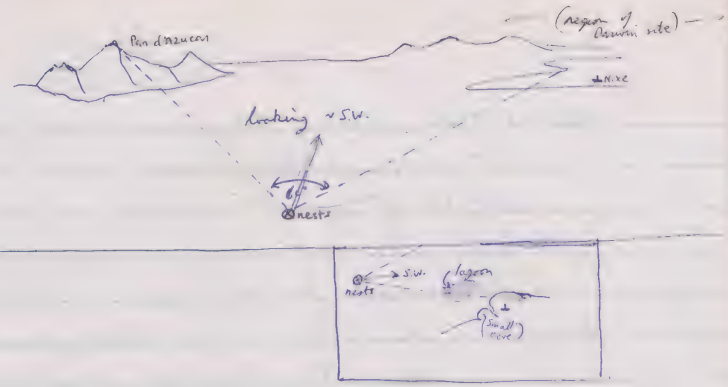
NEST 2 in same tree, in large, knee-high area of trunk.
1 ♀ (TR-N2-A) taken from broken cell end of one piece; later ejected meconium (TR-N2-B). 1 ♀ (TR-N2-C) [and its meconium (TR-N2-D)], and 2 ♂♂ (TR-N2-E) (TR-N2-G) [with the meconium of the first ♂, (TR-N2-F)] taken from tunnel in other piece.

NEST 3 in same tree, in another trunk piece, knee high; ♂ taken from tunnel (deadend) in part of nest; only part of whole nest taken.
(♂ is TR-N3-A).



Frass (TR-N3-B) was taken from a pupal cell (with a white pupa that could swivel its abdomen inside) that was broken into from wrong end. Photos taken on Pan X in field of nest 3.

Immediately surrounding vegetation [* = flowering]:
Bursera, Croton [*], Gossypium [*], Scutia, Castela [*], dead annuals, algae(?).



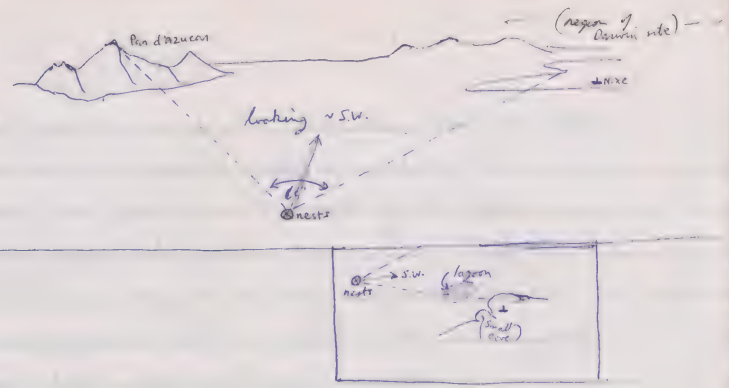
14 April 1970

15 Am Pedral dos – saltus /// then Dom Posillo
4 pm – stors of sailor, instruments
Frank – Walterson above

12 Pita Patt – climbed up. fuel
~~Terrapin Rd – others up ice on shore~~

13 Am – nests, box = Crotalus
Noon – 3 – others down – RS & Robin lost 2½ hr later
Planned to go to Darwinite tomorrow Am.

14 Am – let out Frank & Dom to site
on shore – lava flow area
Halobates, veget'n, X.d. on
Phizophora, mists on Rh. Tropic.
cactus fruit, pix. then by Carro Bay
clothes, boots, then pressed
plants, Wreck Bay — pro lagoon
Parrots – dinner (lobsts) – [illegible] Am



14 April 1970

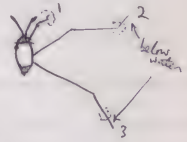
(14)

Halobates

oiling
head → 1 → 2 → 3
to oil #2, raise on 2°, 3°, 10
oil of 1 on 2
to oil #3, raise on 1°, 2°, 3°, 1
oil on 3 w/ 2
copul'n ♂ holds w/ 1 ♀
2 & 3 don't on seldom stances. water

14 April 1970. Watched & made movies & reg. pix of *Halobates* captured earlier, done mostly aboard moving boat in bucket of sea water. Cleaning, oiling, skating & mounting observed & photographed.

Most of reg pix. @ 1/25 - f/4 to 1/50 - f/8



Oiling procedure: Head → 1 → 2 → 3

to oil 2, raise on 2-opp, 3-opp, 1-opp and 3;
oiling on 2 with 1

to oil 3, raise on 1-opp, 2-opp, 3-opp, and 1;
oiling on 3 with 2

Copulation (mounting): ♂ holds ♀ with 1's.;
2's & 3's don't or seldom touch water.

[illegible] DEL ECUADOR
COMANDANCIA [illegible]
[illegible]

[illegible] abril 2 de 1.970

CONVOCADO DE LA COMANDANCIA DE LA SEGUNDA ZONA NAVAL

Asunto: Precautelación de la Fauna y Flora del Archipiélago de Colón o de Galápagos.

Referencia: Decreto Ley de Emergencia, por el cual se reforma el Decreto Nº 17 de Julio 4 de 1.959, atribuyendo a los Capitanes de Puerto el caracter de Jueces para conocer de las infracciones que se cometan en contra de la ley que declara Parques Nacionales de Reserva al Archipiélago de Colón.

1.- Para conocimiento de todos los habitantes del Archipiélago de Colón o de Galápagos, de los turistas nacionales o o extranjeros, en virtud del Decreto que se menciona en la nota de primera de este convenio, a partir de esta fecha estoy ordenando para que los Capitanes de Puerto apliquen estrictamente las disposiciones constantes en el Registro Oficial Nº 873 de Julio 20 de 1.959 sobre la preservación de la Flora y Fauna de las islas Tres Hermanas que forman las islas del Archipiélago de Colón y que textualmente dice:

"Art. 2º.- Prohíbese en todo el Archipiélago de Colón la caza o captura de los siguientes animales y aves que son propios del Archipiélago:

REPTILES: Galápagos (testudo, todas las especies incluidos huevos) Iguanas marinas y terrestres.

AVES: Pinguinos, Albatros, Cormoran, Piula (todas las especies), Flostracos, Flamencos, Patos, Gaviotas, Tórtolas, Lechuzas, Gallinas y Pájaros de Darwin (todas las especies).

MAMIFEROS: Todas las especies de lobos marinos, especialmente el lobo de piel y ratones endémicos.

A partir de la presente fecha, queda prohibido botar o vender las aves o animales mencionados en el Art. anterior más de pieles o datos de éstos, así como también cormillas de lobos, etc. etc.

a). Las personas que infrinjan estas disposiciones serán sancionadas con el decomiso de los animales vivos más una multa de cuatrocientos y setecientos sucres.

b). Las personas que [illegible] especies protegidas o las [illegible] treinta días de prisión.

c). Los turistas que trataren de llevar fuera del territorio Insular animales vivos, cuyas casas, o pieles estuvieren prohibidas, serán sancionados con el decomiso de dichos animales y una multa de cien a mil sucres.

3.- Todos los buques o embarcaciones que trafiquen por aguas del Archipiélago de Colón, así como también los pasajeros serán revisados en cualquier momento para el mejor cumplimiento de esta disposición.

DIOS, PATRIA Y LIBERTAD,

CESAR MOSQUERA AGUILAR,
Capitán de Corbeta [illegible]
COMANDANTE DE LA II ZONA NAVAL.

/laes.-

[illegible]
San Cristóbal

[illegible] abril 2 de 1.970

[illegible] DE LA COMANDANCIA DE LA SEGUNDA ZONA NAVAL [illegible]

Precautelación de la Fauna y Flora del Archipiéla
go de Colón o de Galápagos.

Decreto Ley de Emergencia, por el cual se reforma
el Decreto Nº 17 de Julio 4 de 1.959, atribuyendo
a los Capitanes de Puerto el carácter de Jueces -
para conocer de las infracciones que se cometan -
o contra de la Ley que declara Parques Nacionales
y Reserva el Archipiélago de Colón.

Para conocimiento de todos los habitantes del Ar-
Colón o de Galápagos, de los turistas nacionales o
en virtud del Decreto que se menciona en la par
este comunicado, a partir de esta fecha estoy ci
que los Capitanes de Puerto [illegible] rigor
nas constantes en el Registro Oficial Nº 873 de
959 sobre la preservación de la Flora y Fauna --
tierras que forman las islas del Archipiélago de
actualmente dice:

[illegible]

[illegible]

[illegible] Panamá

[illegible] abril 2 de 1.950

A LOS LA COMANDANCIA DE LA SEGUNDA ZONA NAVAL

Precautelación de la Fauna y Flora del Archipiéla
go de Colón o de Galápagos.

Decreto Ley de Emergencia, por el cual se reform
el Decreto Nº 17 de Julio 4 de 1.959, atribuy
los Capitanes de Puerto el carácter de J
para conocer de las infracciones que se c
en contra de la ley que declara Parques N
o Reserva al Archipiélago de Colón.

para conocimiento de todos los habitantes de
Colón o de Galápagos, de los buques nacion
en virtud del Decreto que se sanciona en la
este comunicado, a partir de esta fecha estoy
de los Capitanes de Puerto aplicar colo
nas constantes en el Registro Oficial Nº 673 de
959 sobre la preservación de la Flora y Fauna --
Islas que forman las islas del Archipiélago de
actualmente dice:

BERNARD
BIGWOOD
BRANIFF
COLINVAUX
COOLIDGE BANK...
CORSON
DARLINGTON
DARWIN STATION
DEHLINGER
DEYRUP
ECKHARDT
EISNER
FOSTER
HARVARD TRAVEL SERVICE, INC.
HARVARD UNIV. (incl. School Office)
KODAK
KUKENOVA
LINSLEY
MACMATH
MOORMAN
MYRLAND
NIEPHAUK
PLATT (U.S. EMBASSY QUITO)
PRITCHARD
ROBY
ROLLINS
ROTH, L.
ROTH, V.
SCHNELL
SCHWARTZ
SILBERGLIED
SIMBERLOFF
SULLOWAY
WILSON.

25 April 1970 | Persons who have visited the station C.D.R.S. (signed guest book):

ENT | Wilford L. Hjort* [924 Westgate Ave., Los Angeles, Calif. 90049] Div. of Entomology, Dept. of Zool., Univ. of Calif., Los Angeles, Cal. 90025 Director: ICR (Insect Control + Research Inc.; consulting Entomologists) 111 N. Rolling Rd., Baltimore 28 MD. RI 7-4582 | (20 February -6 June '66)

ENT | Eugene J. Gerberg* | (20 February -22 Feb. '66)

ENT | Ross H. Arnett, Jr.* | (20-22 Feb. '66)

ENT? | John Stivers* | (20 22 Feb '66)

ENT.? | Don A. Schroeder* 33 Haldeman Rd., Santa Monica, California | (20 February -4 July '66)

ENT. | John N. Belkin* | (20 February -20 Mar. '68)

*(all Univ. California)

BOT. | Daniel Weber, 2000 Neuchâtel, Av. 1er Mars No. 24, Suisse

Kai Ju-shey Ho, Dept. of Biol, Boston U, Boston, Mass. USA.

Warren C. Freihofer, Div. Syst. Biol., Stanford Univ., Stanford Calif.

ORNITH. | Alan & Jean Root, Box 30001, Nairobi, Kenya | (6 Apr.-7 Aug '67)

LIMN. | Paul A. Colinvaux, Dept. Zool. & Entom., The Ohio State Univ., 1735 Neil Av., Columbus O. 43210 | (27 June-29 Aug

OCEANO. | Joel W. Hedgpeth, Marine Science Center, Newport, Oregon

Tom Simkin, Smithsonian Inst., Wash., D.C. 20560 } Fernandina collapse; am. USAF plane over Fernand. | (Jul. 4-Jul 25, 1968)

Sharon Simkin, 2355 N. Vernon St. - Arlington, Va. 22207 } field work on Fernand. July 9-20 | (Jul. 4-Jul. 25, '68)

Keith Howard, US Geol. Surv., Menlo Park, Calif. | (Jul 4.-Jul 25, '68)

Peter C.H. Pritchard, Gainesville, Fla. -(world wildlife Fund) | (27 Jan '70)

[In guest book at Vittmer { R.T. Peterson, Old Lyme, Connecticut. Barbara Hall (aboard Golden Cachelot), 1970 WHOI, Ithaca, N.Y. }]

Mrs. Gesina B. Threlkeld
Institute of Marine Sciences
University of Alaska
College, Alaska 99701

← botanical (& etc.) illustrator. (see also L. Adlard - Galapagos birds)
(at CDRS 24-26 Apr. 1970)

Claude Riedel, 454 Frontenac Place, Saint Paul Minn. 55104

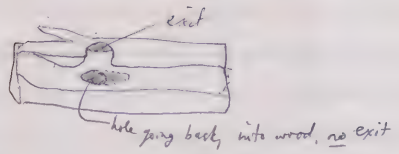
Jeffrey Ashe 250 Walden St Cambridge
Joe Haratani — Ada (c/o) Guy Richard Bailey.

27-28 April

ISLA CHAMPION
XYLOCOPA DARWINI, OLD NESTS 1 (UPPER) AND 2 (LOWER), IN CORDIA LUTEA (OLD DEAD TREES). COLLECTED WITHIN CALDERA FLOOR, ON END FACING ISLA ENDERBY. NESTS HAD BEEN ABANDONED; BEES WERE OBSERVED VISITING PROSOPIS JULIFLORA (?); NONE COLLECTED. 20 APRIL 1970. R. SILBERGLIED.

(NO SPECIMENS TAKEN FROM EITHER NEST.)

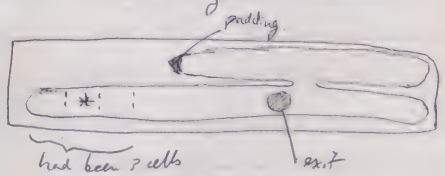
NEST 1 = 8 cm. long, diam = 4 cm.



NEST 2 = 23 cm long, diam = 4-6 cm.

ISLA ESPAÑOLA
XYLOCOPA DARWINI, OLD NESTS 1 (UPPER) AND 2 (LOWER), IN CORDIA LUTEA (OLD DEAD TREES). COLLECTED IN VICINITY (WITHIN 0.5 KM) OF PENINSULA 6 KM ENE OF PTA. SUAREZ. NESTS HAD BEEN ABANDONED; NO BEES OBSERVED FLYING ON ISLA ESPAÑOLA DURING VISIT. 18 APR. 1970. R. SILBERGLIED.

NEST 1 = 25 cm. long 4.5 cm. diam.



* material appears to be compacted fecal pellets of animal = NOT x.d.

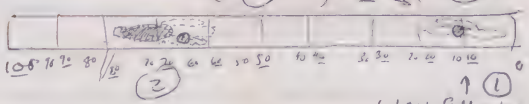
NEST 2 = 25 cm long, 6 cm. diam

28 April 1970

ISLA SANTA FÉ
XYLOCOPA DARWINI, NEST IN DEAD "PALO SANTO" (= BURSERA GRAVEOLENS). COLLECTED ON ISLA SANTA FÉ WITHIN 0.3 KM OF SHORE, AND BELOW THE MAIN CLIFF; AT THE ANCHORAGE ON THE NORTHEAST CORNER OF THE ISLAND. BRANCH WAS AT AN ANGLE OF ABOUT 45°; NEST OPENING ABOUT 1.5 M ABOVE GROUND. 10 APRIL 1970.
BERGLIED (NOTES, P.239)

c. 100 cm. long
diam: 4-6 cm.
see notes, p. 239

2 nests, only in sections
(0-20 cm) (1) and (58-80 cm) (2)

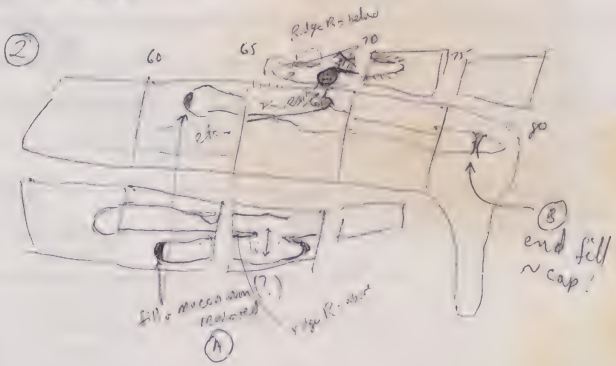


NEST (1)

0-20 cm. no specimens therein.

0-end had 2 cells; other side had 1 (or more?)

NEST (2)



SPECIMENS FROM BARRINGTON (SANTA FÉ) NEST

BA-N1-(A) fill from c. 62 cm, w/ meconium (?) (in ½ dr. vials) (pinned)
BA-N2-(B) end cap (photo)

28 April 1970

ISLA FLOREANA (= SANTA MARIA)
XYLOCOPA DARWINI, NEST IN CORDIA LUTEA (STANDING DEAD TREE) COLLECTED 0.5 KM FROM COAST AT LAS CUEVAS, ON EAST SIDE OF DRY STREAMBED. NEST OPENING ABOUT 1.-2. M ABOVE GROUND, BRANCH AT AN ANGLE. 20 APRIL 1970. R. SILBERGLIED.

nest 29 cm. long
4.5 cm = diam.

simple nest, 1 tunnel w/ central exit; structure easy from photos.

SPECIMENS from (LC) LAS CUEVAS NEST

(A) [LC-N1-A] ♀ adult, in 10 cm. end, at end — pinned
(B) [LC-N1-B] ♀ adult, in 10 cm end, at end — pinned
(C) [LC-N1-C] ♀ adult, in 20 cm end, at end — pinned
(D) [LC-N1-D] meconium of B, ejected on table; collected w/ toilet tissue in genivial (pinned)

ISLA SAN CRISTOBAL (= CHATHAM)
XYLOCOPA DARWINI, NEST 1 OF 3 IN DEAD, STANDING "PALO SANTO" (= BURSERA GRAVEOLENS), COLLECTED ABOUT 0.5 KM FROM SHORE AT "TERRAPIN ROAD", N OF "PAN D'AZUCAR" AND E OF LAGOON, IN THIN BRANCH OF TREE ABOUT 3 M ABOVE GROUND. 13 APRIL 1970. R. SILBERGLIED (NOTES, PAGE 249).

nest 26.5 cm long
2.5 cm = DIAM

simple nest, 1 tunnel w/ central exit, structure easy from photos.

cell at 20 cm: dry pupa, w/ fecal pellets, silk + larva.

SPECIMENS COLLECTED from TR-N1

TR-N1-(A) fecal pellets, free in cell (genivial w/ B)
TR-N1-(B) Pupa, w/ silk, fecal pellets, grey mould? (½ dr. vial)
TR-N1-(C) larva of ? that was in ~~[illegible]~~ pupa (B) in cell; prob. made silk. (In ETOH in gen. vial in ½ dr. vial)

29 April 1970 KEY TO FILM MAILER NUMBERS (see also pp 201-202)

[motion picture] (addressed as on p. 201)

B	460518	#24	Duncan → Punta Pitt, Terrapin Rd.
B	460535	#25	Terrapin Rd → Cerro Brujo (Halobates)
B	460536	#26	Cerro Brujo → Kicker Rock
B	460537	#27	Kicker Rock (boobies) → El Junco
B	460538	#28	El Junco → Bahia Wreck
B	460539	#29	Española → Pta Suarez
B	460540	#30	Pta Suarez #2
B	460541	#31	Pta Suarez #3
B	460542	#32	Gardner nr. Chas. → Las Cuevas
B	460543	#33	Las Cuevas → Champion

29 Apr. 1970

ISLA SAN CRISTOBAL (= CHATHAM)
XYLOCOPA DARWINI, NEST 3 OF 3
IN DEAD, STANDING "PALO SANTO"
(= BURSERA GRAVEOLENS), COLLECTED
ABOUT 0.5 KM FROM SHORE AT "TERRA-
PIN ROAD", N OF "PAN D'AZUCAR" AND
E OF LAGOON, ABOUT 0.5 M ABOVE
GROUND IN THICK TRUNK. L3 APR. 1970
R. SILBERGLIED (NOTES, PAGE 249).

nest

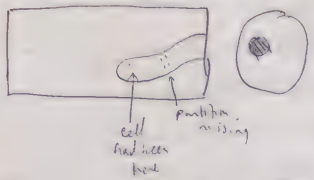
in part only
— NO EXITS, → continue in
other parts of trunk. see
field photos (FX)

SPECIMEN: [TR-N3-A] dead pupa. pinned; (fire ants on in Santa Cruz @ CDRS) — a cast (Dermestid?) skin was seen in cell but blew away.

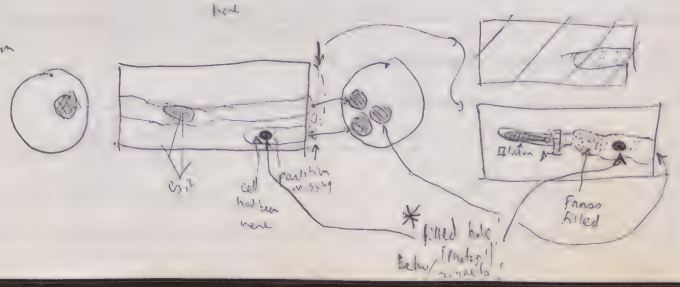
ISLA FLOREANA (= SANTA MARIA")
XYLOCOPA DARWINI NEST 2 OF 3
IN DEAD, HORIZONTAL (ON GROUND)
"PALO SANTO" (= BURSERA GRAVEO-
LENS); TREE HAD AT LEAST 4 OTHER
NESTS WITHIN. LOCATED ABOVE
CRUZ' FARM (FORMERLY FARM OF
F. RITTER, = "FRIDO" OR "LAS
PALMAS"); ABOUT 800 FEET.
22 APRIL 1970. R. SILBERGLIED

nest ~40 cm long, 7.cm DIAM
actual nest in parts 10 cm – 30 cm.

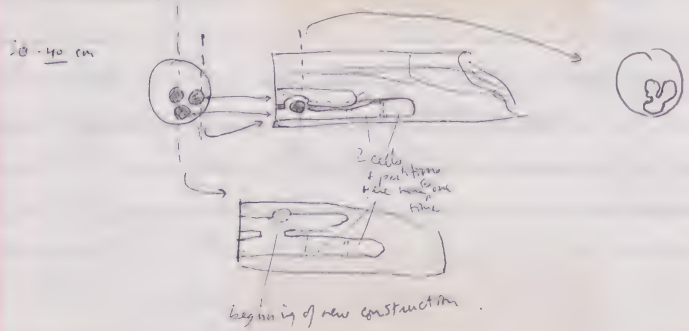
10-20 cm



20-30 cm



Note that in 20-30 cm. section, hole n. center @ 30 leads to tunnel w/ 2 cells, 2nd of which was grass-filled, then passage; then larva of ? (bee, coleop?) [BB-N2-A] in nest, long chamber. Note filled hole (!)(*) between tunnels!!!



partition indicated 2 lines above separating larva [BB-N2-A] from cells in solid wood; larva ∴, shouldn't be Xd.!
appears to be isolated - how'd it get in?
Area marked "grass filled" is so, but COMPACTED!, formerly a used, partitioned cell!

[2 MAY '70] FILM (35mm) MAILER NUMBERS

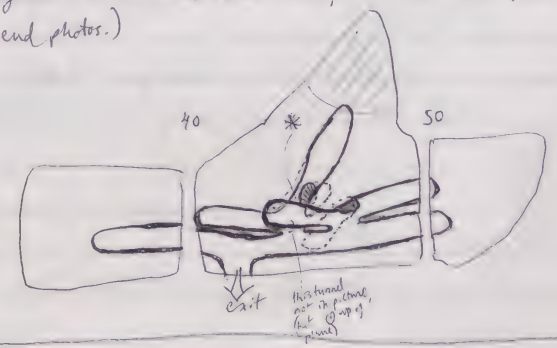
C 722208
H 484927
H 484931
} 9 April - bee life cycle.

30 Apr. 1970

ISLA FLOREANA (= SANTA MARIA) XYLOCOPA BARWINI, NEST IN DEAD "PALO SANTO" (= BURSERA GRAVEOLENS); NEST 1 OF 3 COLLECTED; TREE HAD AT LEAST 4 MORE NESTS WITHIN. TREE HORIZONTAL ON GROUND. LOCATED ABOVE CRUZ' FARM (= "FRIDO" OR "LAS PALMAS", FORMER FARM OF F. RITTER); ABOUT 800 FEET. 22 APRIL 1970. R. SILBERGLIED.

Nest in [illegible]
diameter c. 7 cm.
Actual nest in segments 34-52 cm, [illegible] + 42 cm.
structure simple; get from photos.

No substantial contents; newly emerged bee [BB-N1-A] hiding in area around blind tubes, c. 44 cm. (*)
(no end photos.)



ISLA FLOREANA (= SANTA MARIA) XYLOCOPA BARWINI NEST 3 OF 3 IN BEAM, HORIZONTAL (ON GROUND) "PALO SANTO" (= BURSERA GRAVEOLENS); TREE HAD AT LEAST 4 MORE NESTS WITHIN. LOCATED ABOVE CRUZ' FARM (FORMERLY FARM OF F. RITTER, = "FRIDO" OR "LAS PALMAS"); ABOUT 800 FEET. 22 APRIL 1970. R. SILBERGLIED.

Nest; in section 40 cm long
diam. = 8 cm
structure simple, get from photos

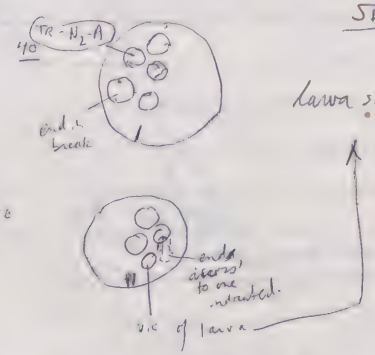
Note: no pollen balls, fecal pellets from Floreana! - meconium only - p. 309

nest in 0-30 cm segments, + 2 small pieces at 0 end. (no. end photos).
all on one side of block.

20 April 1970

ISLA SAN CRISTOBAL (= CHATHAM) XYLOCOPA DARWINI, NEST 2 OF 3 IN DEAD, STANDING "PALO SANTO" (= BURSERA GRAVEOLENS), COLLECTED ABOUT 0.5 KM FROM SHORE AT "TERRAPIN ROAD", N OF 'PAN D'AZUCAR" AND E OF LAGOON, ABOUT 0.5 M ABOVE GROUND IN THICK TRUNK. 13 APRIL 1970. R. SILBERGLIED (NOTES, PAGE 249).

nest 70 cm. long
Diam. c. 9-10 cm.
opening at 15 cm., also large opening(s) ?. at c. 40 cm, [one def. @ 42 cm]
TR-N2-C, E, G vic 40 cm
[log broken at 40 cm]
SEE NOTES p. 249



larva seen through @ 40 [TR-N2-H]

At least 2 real nests in log; one with ≥1 opening at c. (40) 42 cm [above], the other isolated in the 0-30 cm piece, (< 0-20 cm), with opening at 15 cm.

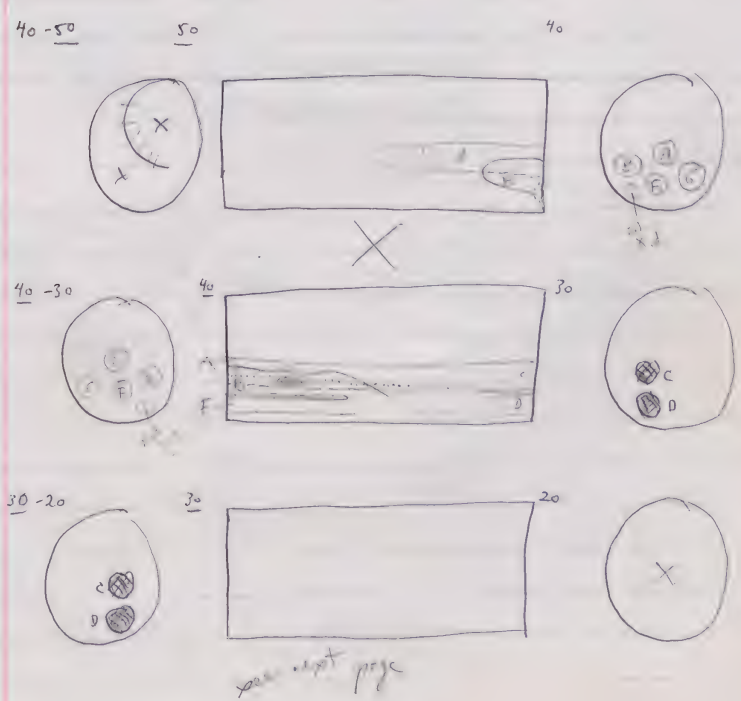
Pupal skin and fecal pellets fell out of 15 cm opening, put into envelope [TR-N2-I]

Parts of an adult bee fell out of cut at 10 cm, when made [TR-N2-J] (envelope)

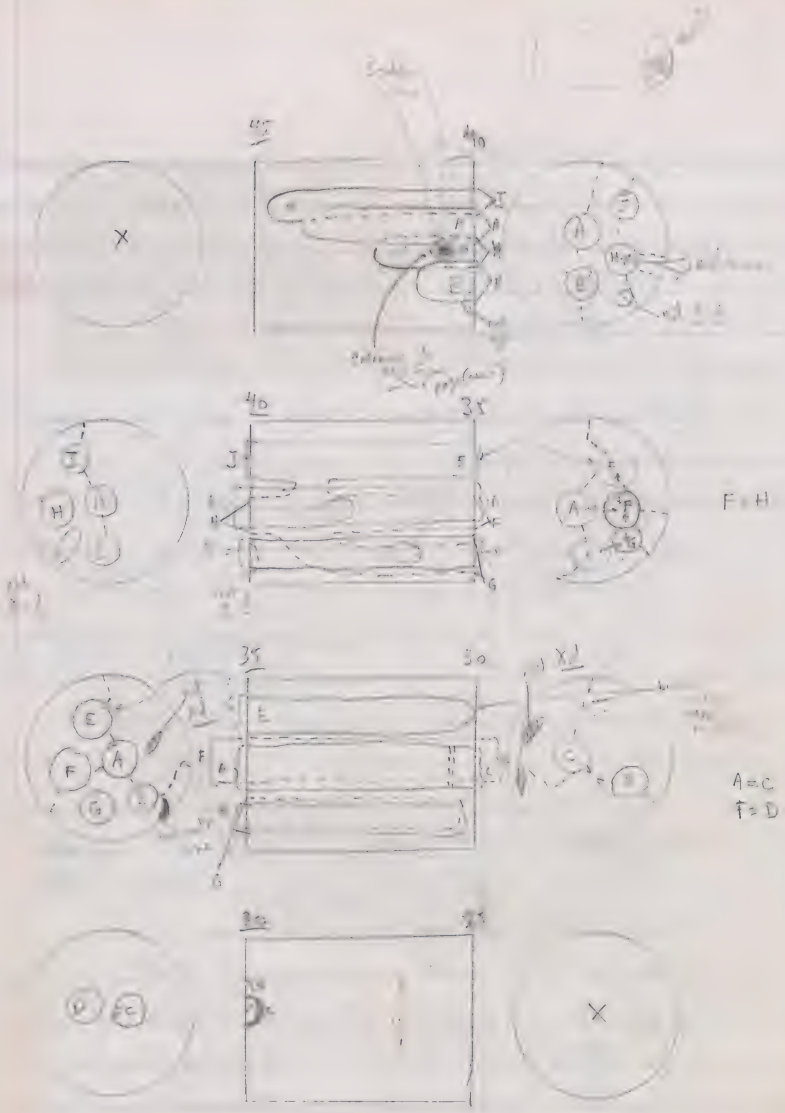
Other nest (open @ c. 42 cm) is from 29- < 50 cm.

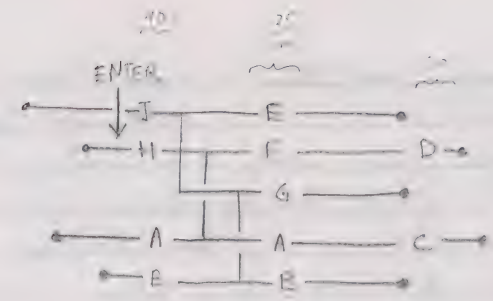
Nest 0-20 cm is very simple; get from photos. ♂ pupa [TR-N2-K] at terminal end of tunnel, with ♀ imm. adult [TRN2-L] sub-terminal; see photo. (In photo; ♀ dead, ♂ pupa alive.)
[TR-N2-K] ♂ PUPA ~~to be kept alive & photo'd daily, for life cycle~~ preserved in ETOH.

Nest in 32-50 cm section EXTREMELY DIFFICULT, complicated.



see next page


F=H
A=C
F=D


ENTER
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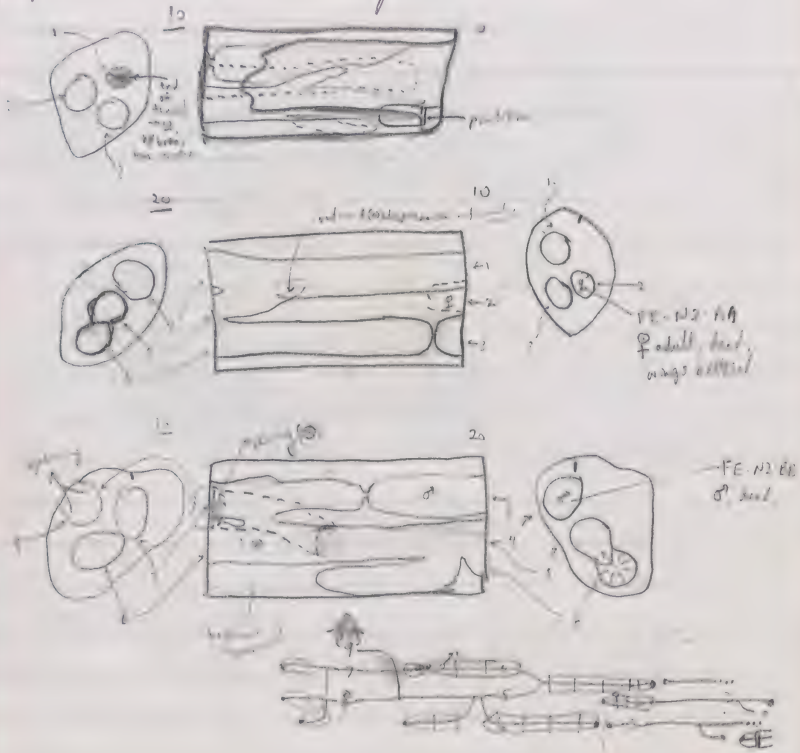
2 May 1970

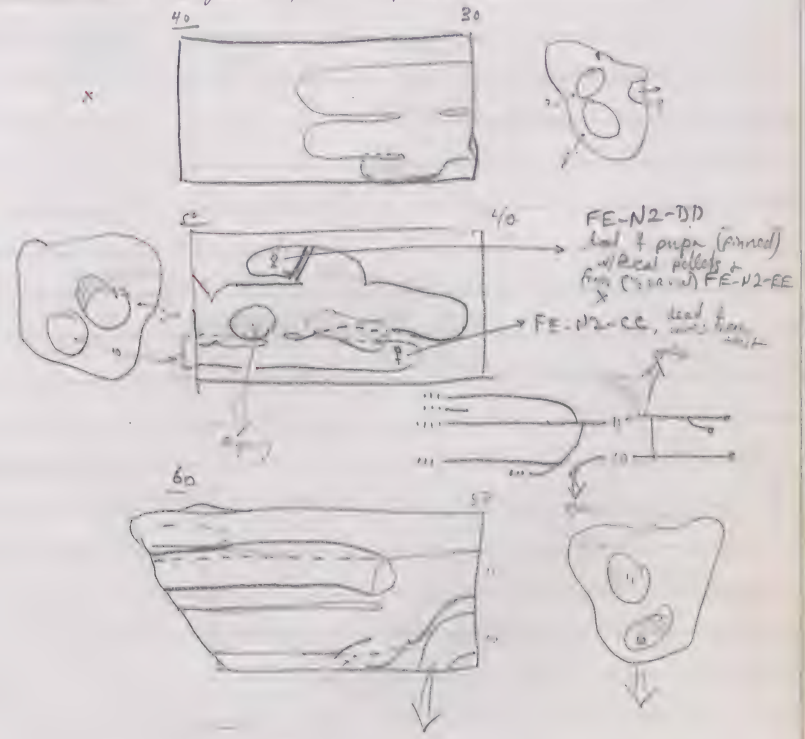
FERNANDINA – NEST 2
XYLOCOPA DARWINI

piece 60 cm. long
diam. ~ 5-6 cm

Wood irregular and old. openings to outside at
0 cm (many at end), 29 cm., 39 cm (start),
49 cm, 51 cm, end-many at 60 cm.
Separate nests on either side of 40 cm.

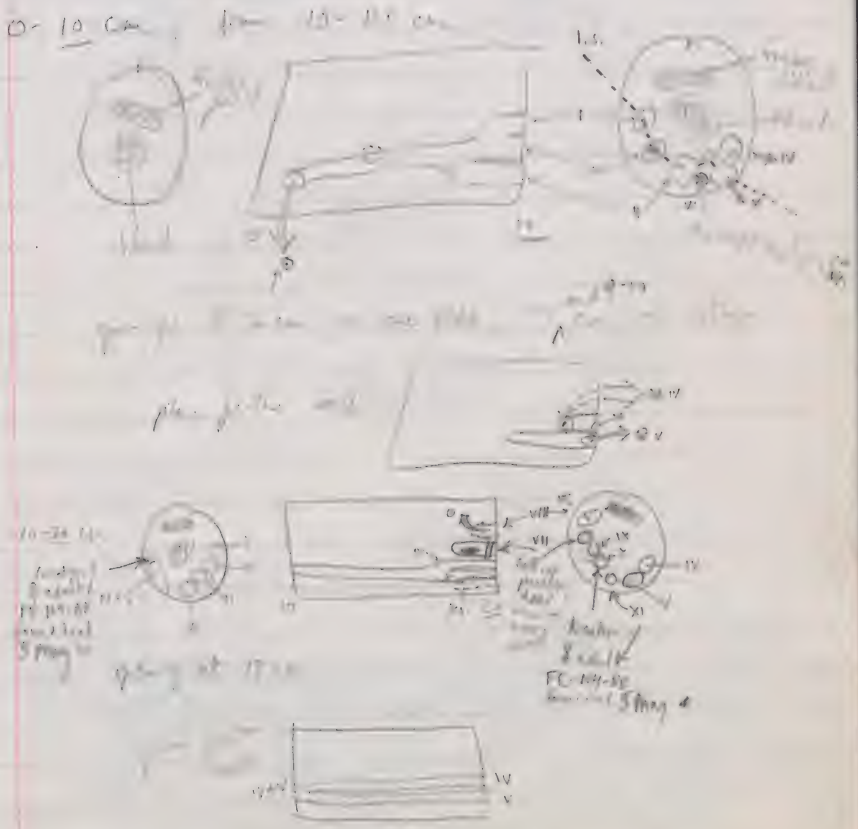


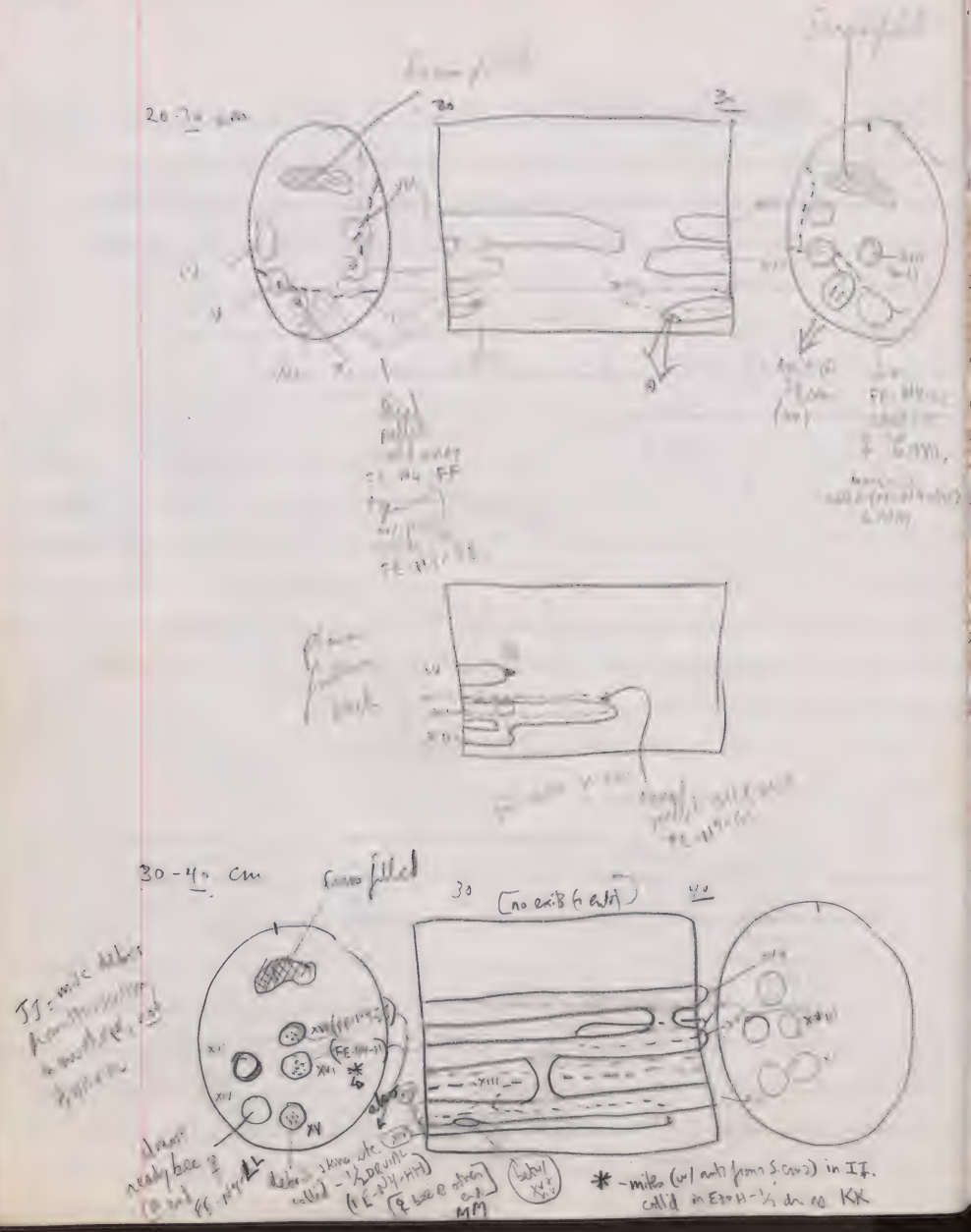
Since I don't remember how many FE-N2- specimens were taken, specimens taken from the nest are labelled double (AA,...) so as to avoid confusion w/ earlier specimens.

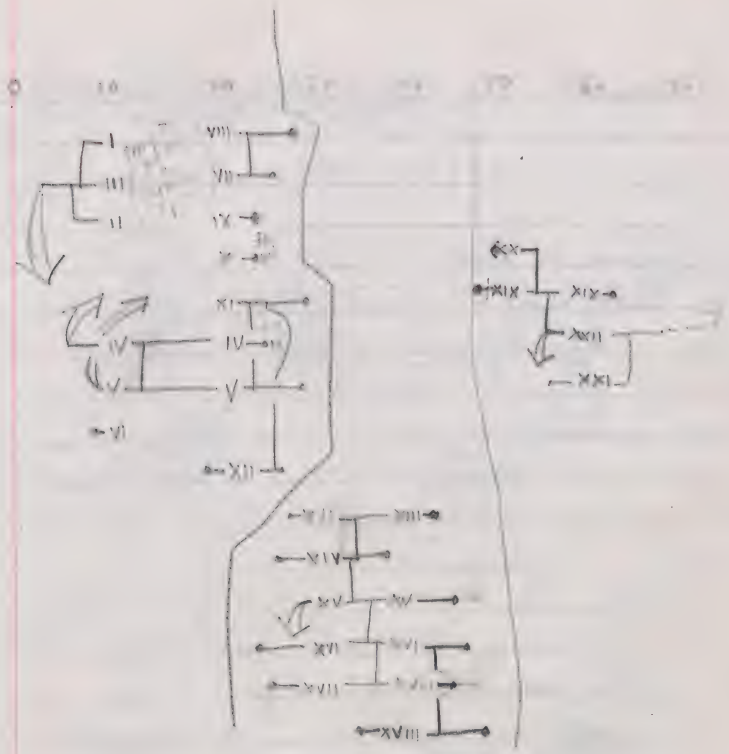


5 May

FERNANDINA - NEST 4
XYLOCOPA DARWINI







mitos taken + photographed from FE-M4-11
R. Perry has corresp. w/ Hayes (Brit Mus) re mites of centipedes + millipedes.
send tracks + info of reptiles to: Kohls (HEN)
Glen M.
Fountain Circuit, Leg. to J. med Ent

Alan H. Hayes (Zoopsychology of Galápagos)
D of E, BM (NH) Cromwell Rd, L.ⁿ, SW 7, Eng'd
RE. Roger Perry (cont'd w/ EGIL)

Get specimens & find specimens.

References to ticks & mites

Hoogstraal, Harry and Glen M. Kohls, 1966. Argas (Microargas) transversus Banks (New subgenus) (Ixodoidea, Argasidae), a diminutive parasite of the Galapagos Giant Tortoise: redescription of the holotype male & description of the larva. Ann. ESA, 59 (2): 247-252.

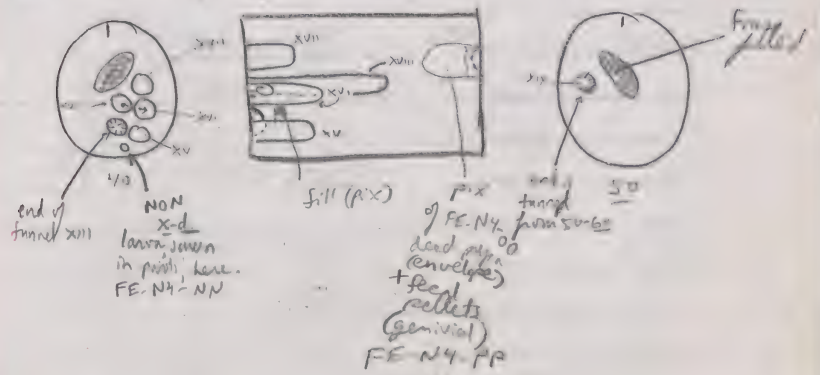
Kohls, Glen M, Carleton M. Clifford & Harry Hoogstraal. 1969. Two new species of Ornithodoros from the Galápagos Islands (Acarina, Argasidae). J. Med Ent, 6 (1): 75-78.

NOTE STEWART, p 218

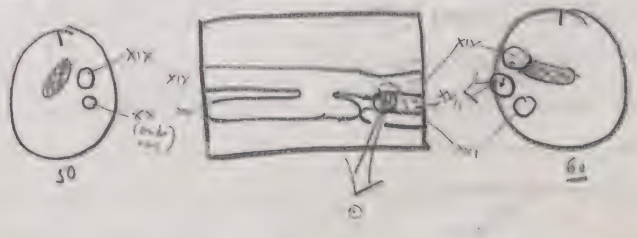
"By far the largest number of [illegible] very small flies. A fact that may be due to the relatively small number of species of mites [illegible]."

Fernandina, Nest 4, cont'd

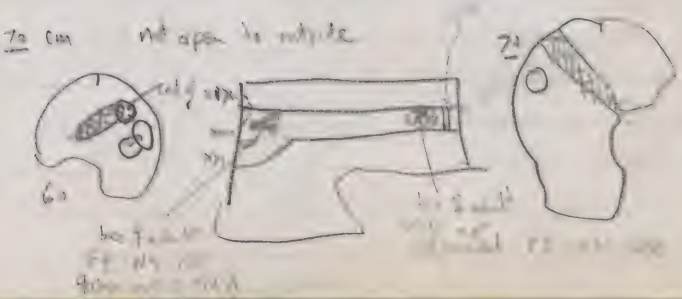
40-50 cm (no opening to outside)



50-60 cm opening @ 57 cm



60-70 cm not open to outside



| X.S.? | Name (Fam) | Zone | Specimen | | |

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83

GALAPAGOS ISLANDS:
Santa Cruz (Indefatigable).
Dec. 1968.
R. Perry & Tj de Vries.
B.M. 1969–17.
Ref. No. L.

Specimen SUPERFICIALLY COMPARED WITH CDRS REF. No. AT C. Darwin Res. item (by R S) Consult fieldwork notes and B.M.N.H. material

Design. a card
v Ono's survey!
Fo, Bd.

83

GALAPAGOS ISLANDS:
Santa Cruz (Indefatigable).
Dec. 1968.
R. Perry & T. de Vries.
B.M. 1969—17.
Ref. No. L.

DATA FOR SCALESIA

1	PEDUNCULATA var ~~TYPICA~~ PARVIFLORA	FLOREANA	SI
2	PEDUNCULATA var TYPICA	SANTIAGO	FS
3	PEDUNCULATA var SVENSONII	SANTA CRUZ-CA	RS
4	AFFINIS GUMMIFERA	FE	RS
5	AFFINIS GUMMIFERA	AL	RS
6	AFFINIS GUMMIFERA	Bahía P. Habemple o TC	CA
7	AFFINIS BRACHYLOBA	DS	RS
8	AFFINIS AFFINIS	FLOREANA	SI
9	HOPKINSII	PINTA	RP
10	ASPERA var SUBINTEGERRIMA	EDEN	RS
11	MICROCEPHALA	ALCEDO (Geyser)	SI
12	CORDATA	Cerro Verde (m. STA Tomás)	SI
13	VILLOSA var CHAMPIONENSIS	CH	RS
14	VILLOSA	LC	RS
15	VILLOSA var ?	GC	RS
16	BAURI	DU	RS
17	STEWARTI var EURYPHYLLA	Bartolomew	DW
18	STEWARTI var EURYPHYLLA	Bartolomew.	SI
19	CROCKERI ?	Bahía Borrero	SI
20	CROCKERI ?	Bahía Borrero	SI
21	CROCKERI ?	South Channel	SI
22	CROCKERI	1 km in from Cerro Colorado, S. Cruz	RP
23	CROCKERI ?	Canal de Itabaca (= S. Channel)	DW

24 RA
25 RS
26 SI
27 SI
28 RS
29

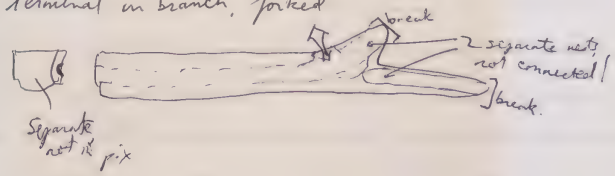
22 May 1970

ISLA PINZÓN (= Duncan)
Xylocopa darwini,
OLD NESTS 1 (upper) and 2 (lower), in Cordia lutea (old but standing dead trees). Collected between 50 and 100 m., above anchorage at small island, to north of streambed. 14 May 1970. R. Silberglied.

(easy. get from photos)

NEST 1 - terminal in branch, one lateral opening, single tunnel continues down to end ~1.5 cm, and up to break of branch

NEST 2 - terminal in branch, forked



28 May 1970

FILM MAILER NUMBERS (MOTION PICTURE)

B 460544 Champion → Central Islands trip
B 460485 MT. CROCKER TRIP
B 460486 MT. CROCKER TRIP
B 460487 MT. CROCKER TRIP
B 460488 MT. CROCKER TRIP
B 460511 MT. CROCKER TRIP.
B 460513 (LAST OF) MT CROCKER TRIP

1 2 3 9 10 17 18 19 20 21 22 23

6 4 5 11 24 25 28

7 8 [redacted] [redacted] 12 13 14 15 16 26 27

~~23~~	~~[illegible]~~		
24	INCISA	TR	CA
25	INCISA	PP	RS
26	RETROFLEXA	Puerto Muñez	SI
27	HELLERI SANTACRUZIANA	TB	DW+SI
28	HELLERI HELLERI	BA	RS
29			

RS (myself)
CA Carmen Angermeyer
SI Syuzo Itow
DW David Weber
RP Roger Perry
FS Frank Sulloway

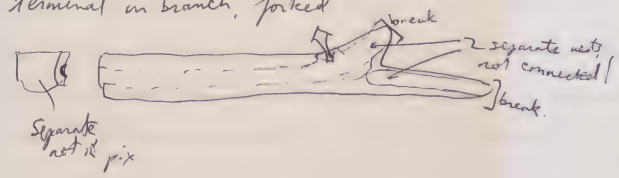
22 May 1970

ISLA PINZÓN (= Duncan)
Xylocopa darwini,
OLD NESTS 1 (upper) and 2 (lower), in Cordia lutea (old but standing dead trees). Collected between 50 and 100 m., above anchorage at small island, to north of streambed. 14 May 1970. R. Silberglied.

(easy. get from photos)

NEST 1 - terminal in branch, one lateral opening, single tunnel continues down to end ~1.5 cm, and up to break of branch

NEST 2 - terminal in branch, forked



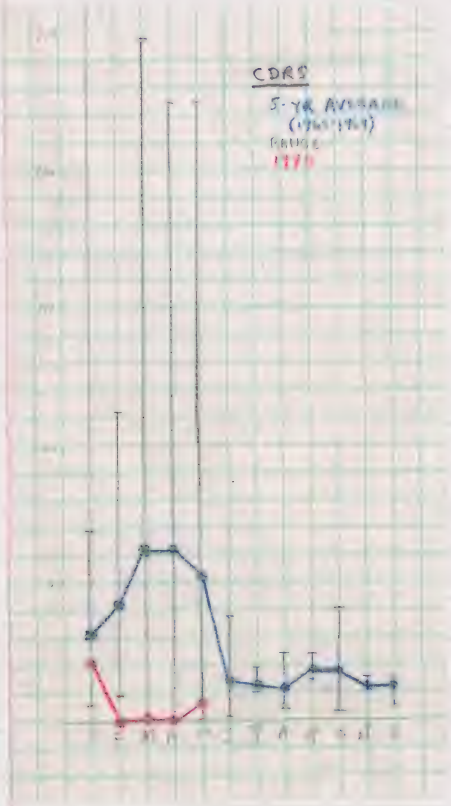
28 May 1970

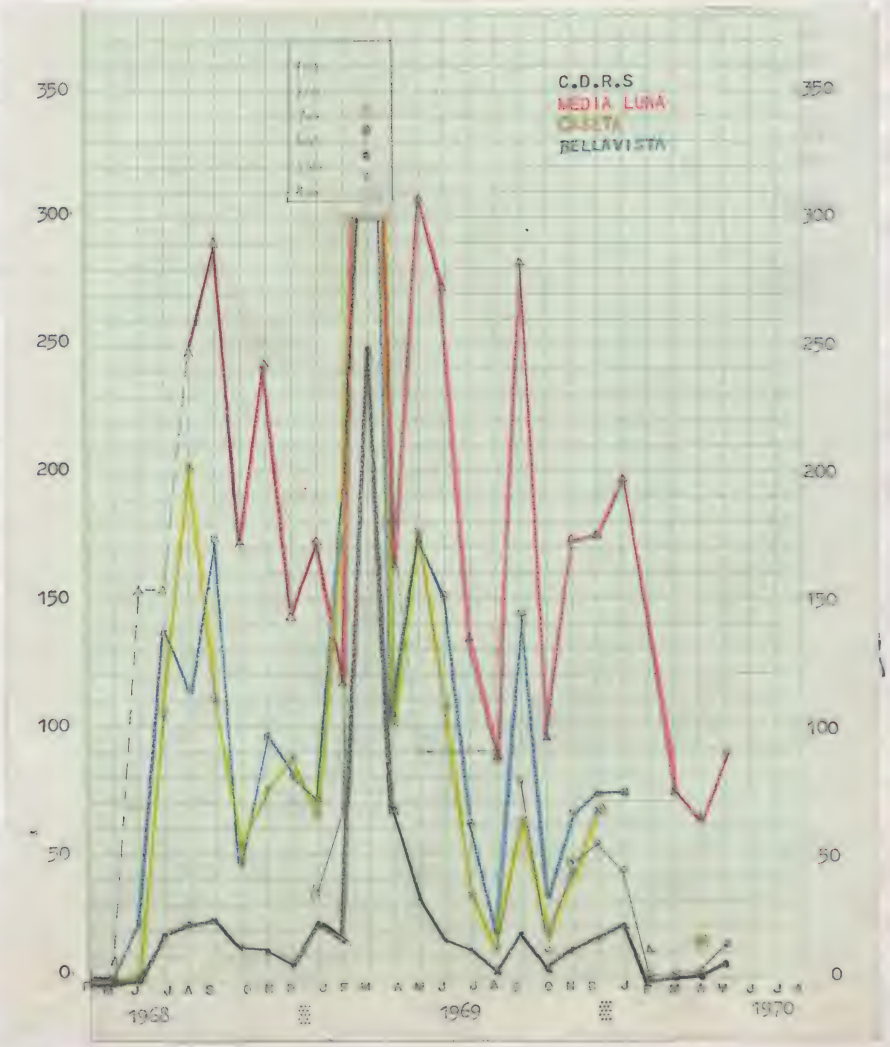
FILM MAILER NUMBERS (MOTION PICTURE)

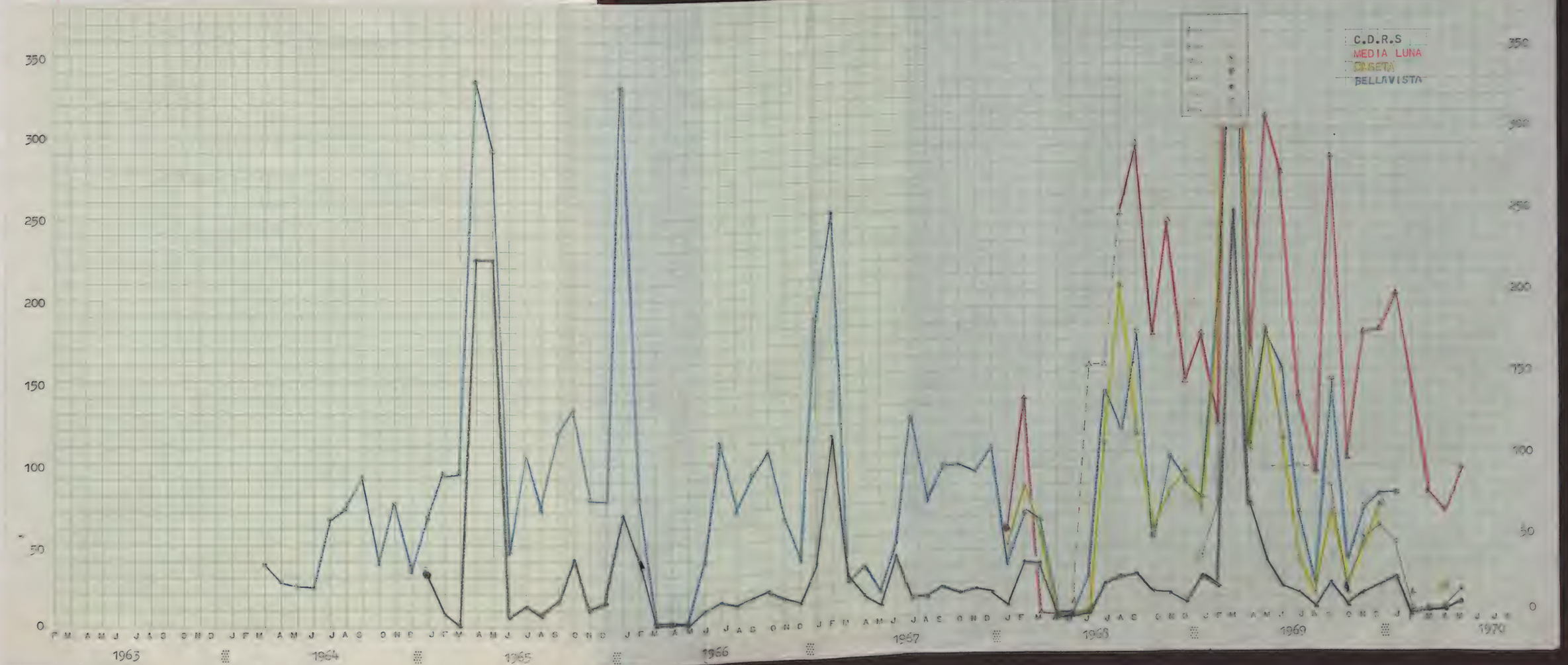
B 460544 Champion → Central Islands trip
B 460485 MT. CROCKER TRIP
B 460486 MT. CROCKER TRIP
B 460487 MT. CROCKER TRIP
B 460488 MT. CROCKER TRIP
B 460511 MT. CROCKER TRIP.
B 460513 (LAST OF) MT CROCKER TRIP

RAIN GUAGE DATA FROM VARIOUS GALÁPAGOS STATIONS,
COMPILED FROM VARIOUS OBSERVERS BY D. WEBER, C.D.R.S.
(ALL FIGURES IN MM.) (*OBSERVER) (MAXIMUM OBSERVED FOR YEAR)

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
SANTA CRUZ: CHARLES DARWIN RESEARCH STATION (ALT. ± 5 M.)													(*C.D.R.S.)
1964													
1965	31.5	8.9	0.0	224.6	24.2	6.3	12.7	8.8	16.2	40.2	11.7	16.5	601.6
1966	69.7	41.8	0.0	0.0	0.0	9.0	13.8	10.4	15.6	19.1	14.0	10.6	203.4
1967	34.6	112.0	26.9	13.8	7.9	37.5	10.6	10.9	17.5	13.7	16.5	13.3	315.1
1968	5.7	31.9	30.2	0.0	0.1	1.0	18.2	22.7	23.5	14.1	11.7	6.6	165.7
1969	23.0	16.8	249.0	68.5	31.4	16.8	12.0	3.8	18.5	3.2	11.0	15.7	469.7
1970	20.4	0.0	1.2	0.0	0.0								
1971													
1972													
SANTA CRUZ: "EL RANCHO" (± 1.5 KM. BEFORE IT) (ALT. 70 M.)													(*C.D.R.S.)
1969	35.1	67.6	477.5	180.3	→			362.0	77.5	11.4	45.7	53.3	1,310.4
1970	41.9	0.0	1.9	2.5	12.8								
1971													
SANTA CRUZ: ESTACION METEO. DE BELLAVISTA (ALT. 170 M.) (MISION FRANCISCANA, *SR. ELISEO MARINO)													
1964			38.6	28.1	24.2	23.5	66.5	70.9	90.8	38.3	74.3	33.3	(488.5+)
1965	66.9	92.1	91.8	334.0	291.9	46.3	104.6	70.5	119.0	133.9	77.9	79.4	1,508.3
1966	311.5	79.3	1.7	2.3	1.5	39.7	111.8	69.3	90.1	104.8	62.0	38.2	912.2
1967	185.6	250.1	24.8	30.5	15.4	44.0	122.7	70.6	92.4	92.3	88.4	103.4	1,120.2
1968	31.5	61.5	58.4	0.0	0.0	23.5	137.9	115.8	173.7	48.5	95.4	80.4	826.6
1969	70.6	192.7	545.4	105.2	174.6	151.3	62.1	18.2	143.7	31.7	66.3	72.0	1,633.8
1970	72.0												
1971													
1972													
SANTA CRUZ: "VILLNIS" (ABOVE BELLAVISTA) (ALT. 200 M.) (*MME. HORNEMAN, ET. AL.)													
1963											40.8	184.0	
1964	211.2	163.7	50.2										
1965	43.5	119.6	35.5	351.6	346.2	53.2	115.8	57.3	156.5	145.7	86.5	79.4	1,590.8
1966	308.6	125.9	0.0	3.0	4.7	46.5	112.1	90.3	101.4	118.6	81.4	44.7	1,037.2
1967	188.6	364.8	20.5	22.1	10.8	24.1	137.3	88.7	121.7	115.6	87.4	107.9	1,289.5
1968	28.6	42.7	76.0	0.0	0.0	21.0	134.7	84.1	203.7	56.7	117.1	85.5	850.1
1969	81.3	100.4	581.0	102.2	204.8	168.2	38.9	23.4	144.1	41.1	48.0	82.0	1,615.4
1970													
SANTA CRUZ: "LA CASETA" (BELOW SANTA ROSA)(ALT. 200 M.) (*C.D.R.S.)													
1967													
1968	41.8	78.8	49.6	0.0	0.9	1.8	105.0	203.1	110.7	53.7	76.6	88.0	810.0
1969	64.5	171.8	720.6	100.8	177.3	108.6	33.4	12.0	62.0	17.8	42.8	66.9	1,569.3
1970					14.8								
1971													
1972													
SANTA CRUZ: DEVINE'S HOUSE (SANTA ROSA VIC.) (ALT. ± 300 M.)(*MR. DEVINE)													
1966			39.6	11.7	13.4	29.2	100.8	69.3	83.3	90.2			
1967	239.6	395.0	55.8	14.2	40.1	11.4	79.9	32.2	45.9	58.8	49.5	62.2	1,079.6
1968	56.1	95.0	58.9	2.0	1.5	11.2	106.2	101.6	130.6	44.2	78.5	98.7	784.5
1969	78.0	155.2	920.8	79.5	214.6	147.3	42.2	13.7	90.9	22.6	52.8	84.1	1,901.7
1970													
1971													
1972													
SANTA CRUZ: MEDIA-LUNA (ALT. 620 M.) (C.D.R.S.)													
1968	51.7	132.0	0.0	0.0	7.8	→		308.6	248.8	291.7	171.1	241.8	143.0	1,666.5
1969	172.6	117.0	666.7	166.4	309.8	271.8	135.6	89.4	282.6	96.5	172.7	175.3	2,616.4
1970	198.8	10.2	73.7	±63.5	±89.5								
1971													
1972													


CDRS
5-YR AVERAGE
(1963-1967)
RANGE
1970


C.D.R.S
MEDIA LUNA
CUETA
BELLAVISTA
350
300
250
200
150
100
50
0
1968
1969
1970


C.D.R.S
MEDIA LUNA
CAGETA
BELLAVISTA
350
300
250
200
150
100
50
0
1963
1964
1965
1966
1967
1968
1969
1970

TRICHROMATIC SEPARATION CHARACTERISTICS
WITH ZEISS UV-366NM LENS AND FILTERS
WITH FLASH AT x100 IN THE INDICATED
POSITION, 1 SMALL TUBE, AND CORRECTION
AS NECESSARY:

UV-366NM FILTER	F11-22	(F AT FILM PLANE)
47B WRATTEN FILTER	F 8-16	(F AT LENS)
57A WRATTEN FILTER	F 8-16	(F AT LENS)

XYLOCOPA DARWINI
NEST FROM BELLAVISTA,
ISLA SANTA CRUZ;
IN FALLEN BALSA, AT
BEGINNING OF NEW
TRAIL TO ACADEMY BAY.
1.6 M. ABOVE GROUND.
27 MAY 1970. (SILBERGLIED)

НИКОЛАЙ БОЕВ. 1967. Галапагос.
Национални острови.
Пояснителен за парка.
ДЪРЖАВНО ИЗДАТЕЛСТВО - СОФИЯ.

TRICHROMATIC INFRARED CHARACTERISTICS
WITH ZEISS UV-366NM LENS AND FILTERS
WITH FILMS AT X100 IN THE INDICATED
[illegible] 1 [illegible] TIME; [illegible] EXPOSURE
AT [illegible]:
UV-366NM FILTER [illegible] (F AT FULL-[illegible])
[illegible] FILTER F 8-16 (F AT LONG)
[illegible] FILTER F 8-16 (F AT LONG)

XYLOCOPA DARWINI
NEST FROM BELLAVISTA,
ISLA SANTA CRUZ;
IN FALLEN BALSA, AT
BEGINNING OF NEW
TRAIL TO ACADEMY BAY.
1.6 M. ABOVE GROUND.
27 MAY 1970. (SILBERGLIED)

НИКОЛАЙ БОЕВ. ПЕЧ. ГЕНЗЛЗГОС.
МАСТИЧУКЕНИТЕ ОСТРОВИ.
ПОРЕДИЦИ ЗА ГЛОБУСИ.
ДЪРЖАВНО ИЗДАТЕЛСТВО - СОФИЯ.

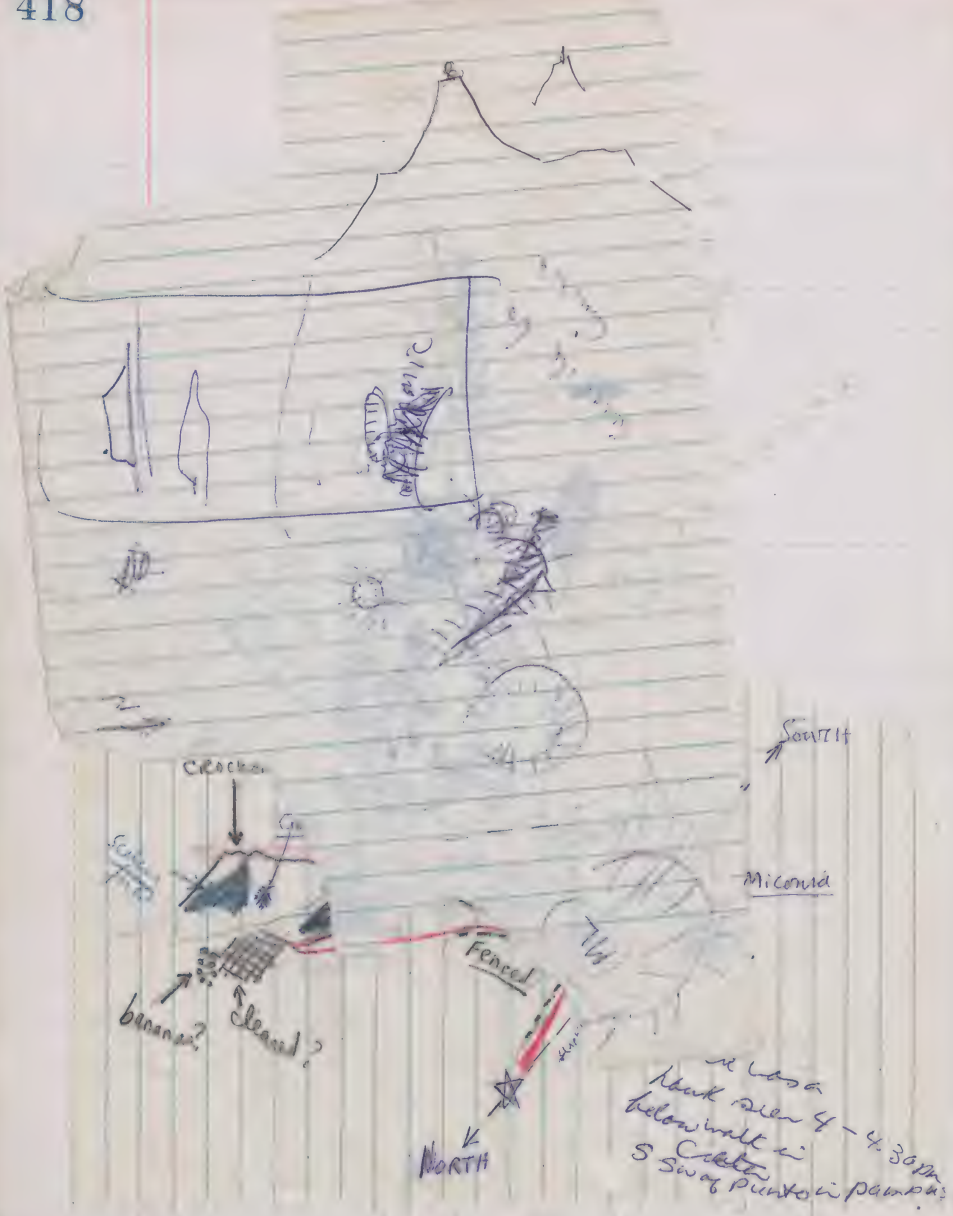
TRANSMITTANCE DISTRIBUTION CHARACTERISTICS
[illegible]
[illegible] PLANE AT [illegible] IN THE [illegible]
[illegible] 1 [illegible]
[illegible] NORMALIZED:
[illegible] FILTER [illegible] (T AT FILM PLANE)
[illegible] FILTER [illegible] (T AT LENS)
[illegible] FILTER [illegible] (T AT [illegible])

XYLOCOPA DARWINI
NEST FROM BELLAVISTA,
ISLA SANTA CRUZ;
IN FALLEN BALSA, AT
BEGINNING OF NEW
TRAIL TO ACADEMY BAY.
1.6 M. ABOVE GROUND.
27 MAY 1970. (SILBERGLIED)

НИКОЛАЙ БОЖИ. ИЗТ. ГАЛАПАГОС
ЗАПАДНОГРЕБЕНСКИТЕ ОСТРОВИ.
ПОРТ ДИШИ ЗА МОРСКИ.
ДЪРЖАВНО ИЗДАТЕЛСТВО - СОФИЯ.

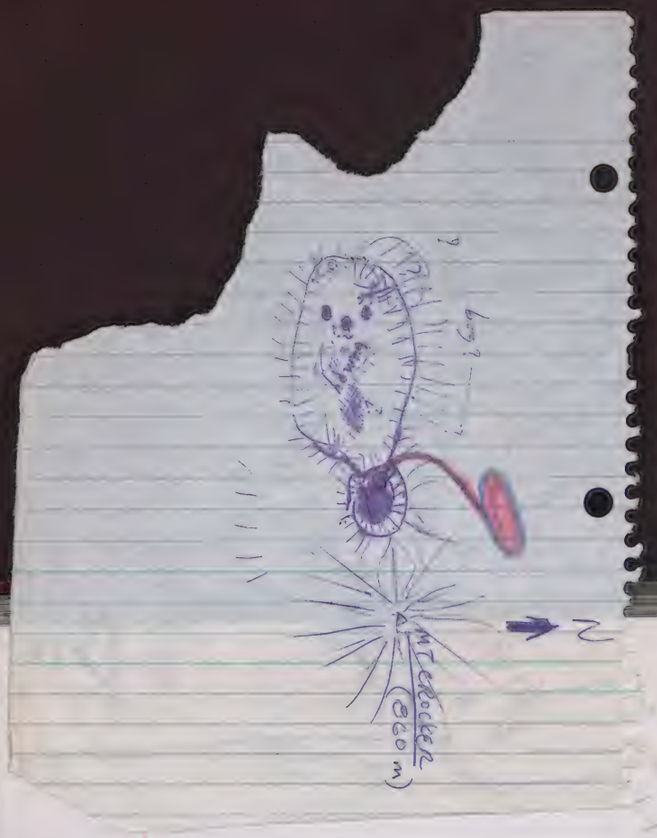
1

1
2
3
4
5
6
7 Utetheisa galapagensis [Tournefortia pubescens]



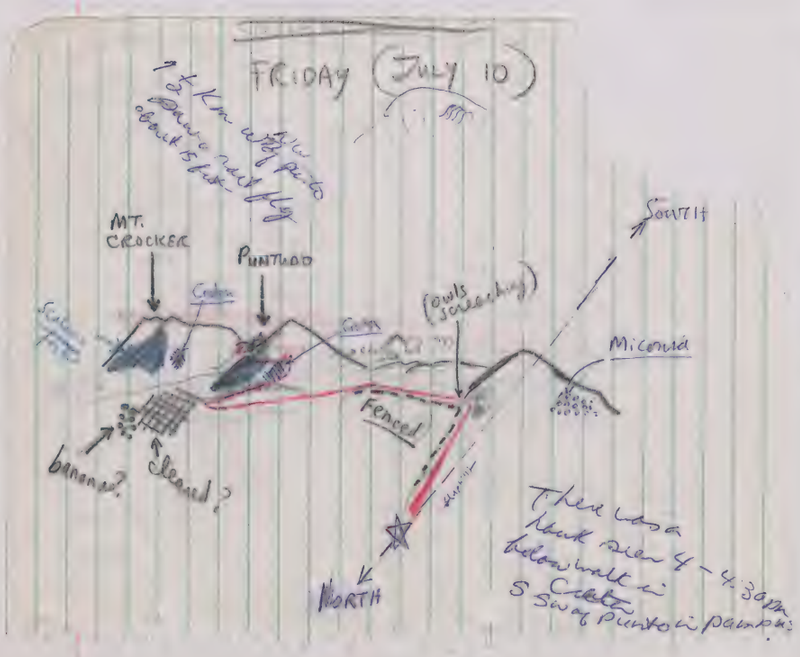
Transfers to CDRS

+	19 May (sent)	(Silberglied)	23 ~~May~~ (notified)	
+	23 May (rec'd)	Chase Manhattan	(paid)	$200.00
—	17 June	[illegible]	[illegible]	



Transfers to CDRS

+	19 May (sent)	(Silhouette)	23 June (retrieved)	$200.00
+	23 May (rec'd)	Chase Manhattan	(paid)	
−	19 June			



not up to date

	Xylocopa darwini	♂♂	♀♀
M	Academy Bay, SANTA CRUZ	[illegible]	[illegible]
	Caseta, SANTA CRUZ	5	[illegible]
	PLAZA	1	0'
M	ALCEDO, Arid zone, ISABELA	[illegible]	1
M	ALCEDO, Caldera Rim, ISABELA	5	8
M	Tagus Cove, ISABELA	[illegible]	[illegible]
M	FERNANDINA, North side	[illegible]	[illegible]
M	James Bay, SANTIAGO	[illegible]	[illegible]
M	JERVIS SOMBRERO CHINO	[illegible]	[illegible]
	DUNCAN	[illegible]	[illegible]
M	SANTA FÉ	[illegible]	[illegible]
M	Terrapin Road, SAN CRISTOBAL	[illegible]	[illegible]
	El Chino, SAN CRISTOBAL	[illegible]	[illegible]
	GARDNER NR HOOD	[illegible]	[illegible]
+	HOOD	[illegible]	[illegible]
	GARDNER NR CHARLES	[illegible]	[illegible]
M	Las Cuevas, FLOREANA	[illegible]	[illegible]
+	CHAMPION	[illegible]	[illegible]
M	Black Beach, FLOREANA	0'	[illegible]

1 [illegible]
2 [illegible]

FEB	15	BOSTON → MIAMI
	16	MIAMI → GUAYAQUIL
	17	GUAYAQUIL → BALTRA → ACADEMY BAY
	18	ACADEMY BAY
	19	ACADEMY BAY
	20	ACADEMY BAY → BALTRA → ACADEMY BAY
	21	ACADEMY BAY
	22	
	23	
	24	
	25	
	26	
	27	
	28	
MAR	1	
	2	
	3	
	4	
	5	ACADEMY BAY
	6	ACADEMY BAY → S. PLAZA
	7	S. PLAZA
	8	S. PLAZA → ACADEMY BAY
	9	ACADEMY BAY
	10	
	11	
	12	

MAR 13 F
14 Sa
15 Su
16 M
17 Tu
18 W
19 Th ACADEMY BAY → ~~[illegible]~~ ALCEDO (Ascent)
20 F ALCEDO (to Geyser)
21 Sa ALCEDO (to NW. rim)
22 Su ALCEDO (Descent) → Tagus Cove [UV]
23 M TAGUS COVE → PTA. ESPINOSA
24 Tu PTA. ESPINOSA
25 W PTA. ESPINOSA → N. SIDE FERNANDINA (Ascent)
26 Th FERNANDINA (N. SIDE, others to rim + return)
27 F FERNANDINA (Descent) → PTA. ALBEMARLE [UV]
28 Sa PTA. ALBEMARLE → JAMES BAY
29 Su JAMES BAY → ALCEDO → JAMES BAY
30 M JAMES BAY
31 Tu JAMES BAY → JERVIS → SOMBRERO CHINO
APRIL 1 W SOMBRERO CHINO → DUNCAN
2 Th Arrived ACADEMY BAY (moved to Station)
3 F ACADEMY BAY
4 Sa ACADEMY BAY
5 Su ACADEMY BAY
6 M ACADEMY BAY
7 Tu ACADEMY BAY

APRIL 8 W ACADEMY BAY
9 Th ACADEMY BAY
10 F ACADEMY BAY → BARRINGTON [UV] BA
11 Sa BARRINGTON → PUNTA PITT [UV] BA, PP
12 Su PUNTA PITT → TERRAPIN RD [UV] PP, TR
13 M TERRAPIN RD TR
14 Tu TERRAPIN RD → "DARWIN SITE", sw. of TERRAPIN RD → WRECK BAY TR, WB
15 W WRECK BAY → EL CHINO → EL JUNCO [UV] WB, EC, EJ
16 Th EL JUNCO → WRECK BAY EJ, WB
17 F WRECK BAY → GARDNER NR. HOOD [UV] WB, GH
18 Sa GARDNER NR HOOD → PTA SUAREZ → HOOD (BAY of PENINSULA) [UV] GH, PS, HO
19 Su HOOD → GARDNER NR CHARLES → LAS CUEVAS [UV] HO, GC, LC
20 M LAS CUEVAS → CHAMPION → POSTOFFICE BAY LC, CH, PO
21 Tu POSTOFFICE BAY → BLACK BEACH (→ CRUZ; WITTMER) PO, BB
22 W BLACK BEACH BB
23 Th BLACK BEACH → ACADEMY BAY BB, DS
24 F ACADEMY BAY
25 Sa ACADEMY BAY
26 Su ACADEMY BAY
27 M ACADEMY BAY
28 Tu ACADEMY BAY
29 W [illegible]
30 Th [illegible]
MAY 1 F [illegible]
2 Sa [illegible]
3 Su [illegible]

MAY M 4 ACADEMY DAY

T 5

W 6

Th 7

F 8

S 9

S 10

M 11

T 12

W 13

Th 14

F 15

S 16

S 17

M 18

T 19

W 20

Th 21

F 22

S 23

S 24

M 25

T 26

W 27

Th 28

F 29

MAY S 30

S 31

JUNE M 1

T 2

W 3

Th 4

F 5

S 6

S 7

M 8

T 9

W 10

Th 11

F 12

S 13

S 14

M 15

T 16

W 17

Th 18

F 19

S 20

S 21

M 22

T 23

W 24

Th 25

F 26

S 27

S 28

M 29

JAN Θ 25
F 26
S 27
Su 28
M 29
T 30
JAY 1
Θ 2
F 3
S 4 to Media Luna, Mirador
Su 5 w/Dee Breeze towards Craters (E of Crocker)
M 6 to media Luna, Mirador, Micania; to walk-in Crater (Agave)
T 7 to summit of Mt Crocker from west; then into crater (snow) on ridge
W 8 to Panty, then to Camote via El Camote, then to Bella Vista (wood) & up again
Θ 9 lost W of camp; explored Mirador
F 10 to viz. Corralon, etc.
S 11 to Academy Bay
Su 12 Pressed plants
Luna A, Bob Nunes
M 13 Melody photography
Received Passport via McFarland/Fritz
Dee left for Fernandina
T 14 R. Perry returned from Japan (McFarland to Coyote)
W 15
Θ 16
F 17
Sa 18
Su 19
M 20